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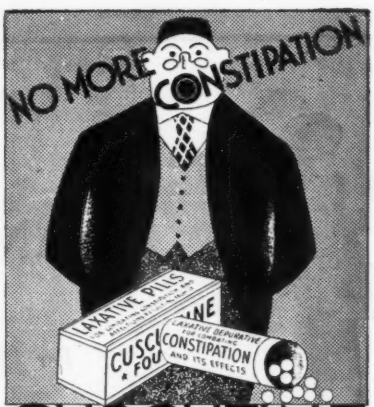


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# JOURNAL

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# INDIAN MEDICAL ASSOCIATION

Vol. IV *Calcutta : July, 1935* No. 11


## SOME RECENT NUTRITIONAL RESEARCHES WITH REFERENCE TO INDIAN FOOD-STUFFS AND DIETARIES


B. C. GUHA

*Calcutta*


The increasing emphasis that is being laid on nutritional researches throughout the civilized world indicates a mental orientation, which spells great progress in near future, especially in the domain of preventive medicine. Nutrition is the bed-rock of life and health and there are signs already in Europe and America that recent advances in our knowledge of the science of nutrition are not only being applied in curing the so-called deficiency diseases, which are after all not so common, but what is far more important, are being utilised in averting diseases and promoting a higher standard of normal health. Our individual development is conditioned by heredity and environment and, as SIR GOWLAND HOPKINS recently pointed out, of these environmental influences nutrition constitutes a most important factor. There is no doubt that future work in the field of nutrition will have a most important bearing on the standard of health of intelligent communities and on medicine in its curative and more specially in its preventive aspect.

India, unfortunately, has not kept pace with some other civilized countries in nutritional work. MCCARRISON's admirable work regarding the nutritional deficiencies of some Indian dietaries indicates what vast amount of work remains to be done in this country. Systematic investigations on the nutritive values of the hundreds of food-stuffs of our country have not yet been carried out. There are great differences in climate, soil, nutritional habits, traditions, availability of food-stuffs, etc., from region to region. A nutritional survey dealing with this huge problem in all its aspects in a co-ordinated manner is an urgent desideratum, as I have often pointed out.

In this article we wish to set forth some results we have obtained in course of our nutritional work during recent years. The effect of cooking on the food-values has not been considered at the moment.

### DISTRIBUTION OF VITAMINS

Vitamin A—Investigations carried out on the vitamin A content of Indian fish-liver oils show that quite a number of them, for example, the liver oils of *Rohit* (*Labeo rihita*), *Mrigal* (*Cirrhina mrigala*), *Vetki* (*Lates calcarifer*), etc., are very rich in vitamin A, being considerably more potent than cod liver oil, though poorer than halibut liver oil (CHAKRAVORTY, MOOKERJEE and GUHA, 1933; GHOSH, CHAKRAVORTY and GUHA, 1933). The use of different diluents for the administration of the oils to rats shows that the observed potency may vary considerably according to the vehicle used for the administration of the oils (GHOSH and GUHA, 1935[1]). The whole bodies of fishes

have varying degrees of vitamin A potency, *rohit* (*labeo rohita*), *parse* (*mugil parsia*) and *tangra* (*aoria tengora*) being among the richest and *hilsa* (*clupæ ilisa*) being the poorest among 12 varieties of fish that have been investigated (Ghosh and Guha, 1934).

Among the pulses *kanchamung* (*Phaseolus mungo*), *chola* (*Cicer arietinum*), *masur* (*Lens esculenta*) and *mator* (*Pisum arvense*) are fairly good sources of vitamin A comparing well with some of the fishes (Ghosh and Guha, 1934).

Green vegetables are, of course, fairly good sources of vitamin A, owing to their carotene content. Among the fruits, the mango is a very rich source of vitamin A (Guha and Chakravorty, 1933[1], Ghosh and Guha, 1934).

### Vitamin B—Complex

Whole cereals are usually good sources of vitamin $B_1$, but highly milled rice, as is usually taken, is deficient in this vitamin. Among the pulses, *kanchamung* is a rich source of vitamin $B_1$. Vegetables, as a rule, are rather low in this vitamin. *Begun* (*Solanum melongena*) and *shakalu* (*Pachyrhizus angultus*) are good sources of vitamin $B_2$. Among the pulses studied, *mator* (*Pisum arvense*) is the richest source of vitamin $B_2$ (Ghosh and Guha, 1934). Mango is a fairly good source of both vitamins $B_1$ and $B_2$ (Guha and Chakravorty, 1933[1]).

The kidney and liver of animals contain usually large quantities of vitamin $B_2$. Fish liver (from *hilsa* fish) is, however, a poor source of the vitamin (Guha and Chakravorty, 1933[2]).

Country liquor made from the date is a good source of vitamin $B_2$, but is rather poor in $B_1$ (unpublished results).

### Vitamin C

An investigation of about 40 Indian food-stuffs, mainly fruits, has revealed that the guava, mango, shaddock (*batapi lebu*), lichi and pine-apple are richer in vitamin C than the orange and lemon, the well-known anti-scorbutics (Guha and Ghosh, 1934; Ghosh and Guha, 1935[2]). Country liquor from the date is a rich source of vitamin C, being about 10 times as potent as an ordinary sample of human milk obtained from Bengali women (unpublished results). It is interesting to note also that the conversion of cow's milk into curd, instead of causing any loss of vitamin C, serves actually to stabilise it (unpublished results). As vitamin C is very unstable to heat and air, it is the C values only of the food-stuffs like fruits that are eaten raw, which are nutritionally important.

The information that some of our common fruits are very good sources of vitamin C should be of special importance in view of the fact that widely different diseases like pyorrhœa, Addison's disease, hæmophilia, etc., are being connected at least partially, by some investigators (though as yet without definite proofs) with deficiency in vitamin C.

### Minerals in Indian Food-stuffs

Only a few food-stuffs have been investigated by us with reference to some of the nutritionally important minerals—calcium, phosphorus and iron. Of only 10 food-stuffs studied, cabbage, *lal shak* (*Amarantus sps.*), *gima shak* (*Erythræa roxburghii*) and *pooin shak* (*Bassela cordifolia*) are rich sources of calcium (0.18-0.15 per cent. in the fresh food-stuff). *Lal shak*, *gima shak*, *kolmi shak* (*Ipomœa reptans*) and *palong shak* (*Spinach oleracc* ) are fair sources of iron (0.03-0.02 per cent. in the fresh food-stuffs). *Patol*. (*Trichosanthes dioica*), *pooin shak* and *dhenrosh* (*Hibiscus esculentus*) are good sources of phosphorus (0.4—0.1 per cent. $P_2O_5$ in the fresh food-stuffs) (Ghosh and Guha, 1933). *Polta* (leaves of Trichosanthes dioica) is a particularly important food-stuff, being unusually rich in calcium (0.46 per cent.), iron (0.8 per cent.), phosphorus (0.25 per cent. $P_2O_5$) and protein (5.1 per cent.) (Ghosh and Guha, unpublished results).

### Protein in Indian Food-stuffs

The pulses, as a rule, are fair sources of protein. Of only a few food-stuffs studied, *palong shak*, *patol*, *gima shak* and *kolmi shak* are fair sources of protein (2.2-1.7 per cent. of the fresh food-stuffs) (Ghosh and Guha, 1933). *Polta* is particularly rich in protein (see above). The biological values of these proteins have not yet been studied.

### Studies of a Bengali Dietary

Investigations on the adequacy of a mixed diet, derived from a Calcutta " mess "—diet of the type, which is usually consumed by urban populations—in regard to the promotion of growth of young rats have revealed that there is a partial (and not acute) deficiency of vitamins A and B in it. The growth-promoting power of the diet is noticeably improved by incorporating yeast and cod liver oil in the diet, as

sources of vitamins A, D and B (GUHA, 1934). It is also probable that the diet is deficient in protein as well as some minerals. This, however, awaits further investigation.

Under the circumstances, it would appear that for pregnancy and lactation, which produce an increased demand of the vitamins and minerals, the usual diet would be very considerably inadequate. The author is persuaded that much of the ailment of pregnant and lactating women in Begnal as well as of infants could be attributed to a partial deficiency of calcium, phosphorus, iron and vitamins (chiefly, vitamins A, B and C).

It may be mentioned that human milk derived from Bengali women is about 4 times poorer in vitamin C than that derived from English women in Engiand (unpublished results). Whether this indicates a chronic state of vitamin C—subnutrition in our women is worthy of further investigation.

## DISCUSSION

Poverty is by far the most important cause of malnutrition in India. Apart from poverty, however, ignorance is a very important contributory cause. This ignorance is twofold. Firstly, there is a lack of detailed knowledge about the nutritive values of the vast numbers of our own food-stuffs and the consequent inability to construct model dietaries. Secondly, there is the ignorance of the public about the little knowledge which has been gathered. In this respect it is the duty of the scientific and medical men and publicists to make this knowledge available to the public.

In the foregoing we have set forth the results we have obtained in course of the investigation of the nutritive values of some Indian food-stuffs in order merely to draw attention to the vast amount of work, which is still undone. A little consideration of the usual Bengali dietary would show that the supply of iron cannot be optimal, specially for pregnant women. None of the vegetables, we have studied, consumed in usual quantities, would supply the increased demand of iron in pregnancy. The other articles of diet would not appear to answer this demand fully either. In the majority of cases, therefore, there would be a proneness to anæmia in pregnancy.

During pregnancy and lactation, one might empirically suggest for Bengali women in particular (1) increased consumption of iron by means of the iron-containing food-stuffs mentioned as well as by occasional administration of iron in the form of ferric chloride or ferric ammonium citrate, (2) increased consumption of calcium and phosphorus by means of the vegetables recommended in this paper, if not by means of milk, which is the best and (3) increased consumption of vitamins A, B Complex and of C by means of green vegetables (raw or gently cooked, and not fried), eggs, potato, *begun* (egg-fruit), *kancha-mung*, wheat (which is much richer in vitamin $B_1$ than milled rice) and fresh fruit juices (like mango, orange, pine-apple, etc.). This may be supplemented by the occasional administration of cod liver oil and of gently cooked liver of fish or mammals. An unbalanced carbohydrate-rich diet is bad and cereals have a definite rickets-producing effect, which can be corrected by increased ingestion of calcium and of vitamin D (E. Mellanby). There is also an increased demand of iodine during pregnancy, which cod liver oil would supply, but as Bengal is near the sea, the water contains and would appear to supply sufficient quantities of iodine. It should be emphasised that the diet of the pregnant and lactating woman deserves the greatest attention, apart from the injury to the mother, the mischief done by subnutrition in embryonic and infant life cannot be sufficiently made good by correcting the dietary deficiencies later in the life of the individual.

Practically the same principles apply to nutrition during childhood and adolescence. The usual diet of the average growing and adolescent boy and girl in Bengal cannot certainly suppply optimum nutrition. But the imperative need for supplying building materials during pregnancy and lactation deserves, I think, the most immediate attention of our medical men.

In this work I have received the ungrudging help of my co-workers, Messrs. H. G. Biswas, P. N. Chakravorty, N. Das and A. R. Ghosh. To them my best thanks are due.

## REFERENCES

CHAKRAVORTY, MOOKERJEE and GUHA (1933), *J. Ind. Chem. Soc.*, 10, 361.
GHOSH, CHAKRAVORTY and GUHA (1933), *Ind. J. Med. Res.*, 21, 442.
GHOSH and GUHA (1933), *ibid*, 21, 447.
GHOSH and GUHA (1934) *ibid*, 21, 761.
GHOSH and GUHA 1935, 1), *ibid*, 22, 521.
GHOSH and GUHA (1935, 2), *J. Ind. Chem. Soc.*, 12, 30.
GUHA (1934), *Ind. J. Pediatrics*, 2, 30.
GUHA and CHAKRAVORTY (1933, 1), *Ind. J. Med. Res.*, 20, 1045.
GUHA and CHAKRAVORTY (1933, 2), *ibid*, 21, 211.
GUHA and GHOSH (1934), *Current Science*, 3, 201.

# TREATMENT OF SMALLPOX WITH LIVER

V. GOVINDAN NAIR, M.R.C.P., F.R.F.P.S., etc.
*Vizagapatam*

The treatment of smallpox, as that of other acute infectious fevers, has to be considered under two aspects:—

(1) Treatment of the patient.

(2) Prophylaxis. This consists of compulsory notification, isolation of the patient preferably in a hospital if one exists or at least home isolation, disinfection, quarantine and vaccination of the contacts and the community.

Treatment proper consists of general management, diet, judicious and sympathetic nursing, symptomatic treatment, and drugs recommended for internal administration and external application. All authorities are agreed that there is no specific treatment for smallpox. GREGORY writing over a hundred years ago observed that, " there is no peculiar method which can be devised for the prevention of pits and scars." McCOMBIE remarks in the System of Medicine (ALBUTT and ROLLESTON, 1912), " No drug has yet been discovered that will influence the development of or arrest the postulation of the eruption." BEARDSLEY in Modern Medicine ( OSLER and MCCRAE, 1926) closes the section on smallpox with the observation, that " It is well to remind ourselves that the treatment of this disease is much less satisfactory than the prevention." American authors SHCAMBERG and KOLMER in their book on Acute Infectious Diseases (1928) write, " Various, indeed, are the methods that have been recommended for the prevention of pitting in smallpox, and yet we think that it can be truly said that no one of them has stood the test of experience." " There is no well-recognised specific treatment for small-pox, and it is doubtful if any of the numerous drugs recommended for internal use or external application has power to abort the disease or prevent the occurrence of scarring." (ROLLESTON, Acute Infectious Diseases, 1929). Numerous and varied are the drugs that have been recommended for the treatment of smallpox, but there is no agreement amongst the authorities whether any one of them is able to modify the disease or prevent deep scarring and pitting. These are:— Sulphocarbolate of sodium, Sodium thiosulphate, salol, thymol, eucalyptus oil, bichloride of mercury, brewer's yeast, acid carbolic, sodium salicylate, xylol, intravenous injection of 10 c.c. of 1-500 solution of potassium permanganate, subcutaneous injections of anti-streptococcal serum in two doses of 20 c.c. each, convalescent serum, transfusion of convalescent blood, electrargol 10-20 c.c. intravenously and exposure to red light, Finsen light and violet rays. Most of these remedies have been tried by many workers in the field with little or no success. Convalescent serum, electrargol, potassium permanganate solution, anti-streptococcal serum, and salol are said to be of some benefit. Exposure of the whole skin to violet rays according to Romeo, " not only produces considerable relief but also prevents pock marking if applied before pustulation has occurred."

We have found that liver extract injected intramuscularly is capable of aborting the eruption of smallpox at any stage, shortening the usual length of its course and preventing the development of the pustules and the consequent deep scarring or pitting in addition to the improvement of general health and well-being of the patient by controlling the toxic symptoms. These encouraging results have induced us to publish them so that others with better facilities and opportunities may give this treatment an extensive and critical trial. This report is based on the observations on twenty-eight cases treated with liver extract at different stages of the disease. Twenty-eight is no doubt a small number, particularly in an epidemic disease like smallpox, but the difficulty, in this country, of convincing the patient and his relations about the benefit of any kind of treatment for a disease which is considered even by some educated people to be due to a temporary divine occupation of the body, is great.

### TREATMENT WITH LIVER EXTRACT

Soon after the diagnosis is made, intra-muscular (intragluteal) injections of the liver exrtact were given daily till the eruption desiccated and incrusted.

Not more than eight to ten injections were given in any case. Every case must be judged on its own merits. In the discrete or modified types, four or five daily injections suffice. In the beginning 2 c.c. were given daily. The same dose was given even to children; but in infants it was reduced to 1 c.c. With experience it was found that it was advantageous to begin the treatment with larger doses. 5 c.c. of liver extract were given for the first two or three days according to the severity of the case, followed up with 2 c.c. for the remaining period. No matter what the stage of the disease is it is profitable to start with 5 c.c. Rarely anaphylactic or nitritoid crisis may develop a short time, say within an hour, after the intramuscular injections of liver. So the injections of liver extract are partially contra-indicated in subjects of asthma, though it is recommended as a treatment for asthma (allergic form). In an asthmatic patient with erythema multiforme anaphylactic shock developed in half an hour after an intramuscular injection of a preparation of liver extract. So it is worth while to have always a few ampoules of adrenaline chloride 1-1000 to meet such emergencies. The two preparations used in these observations were (1) Campolon of Messrs. Bayer-Meister-Lucius and (2) liver extract injectable of Messrs. Bengal Chemical and Pharmaceutical Works, Ltd. and both were found to be equally good.

If the treatment is begun just when the papules are erupting, then either they dry up and develop no further, or, if the infection is very severe, they may proceed to the vesicular stage, but the vesicles do not attain their usual size or form. The vesicles do not become pustules but desiccate and incrust, and when decrustation takes place there are only superficial thin scars left, which may fade away in course of time. In severe unmodified or confluent cases, the papules develop into vesicles which become cloudy and rarely pustular; and they get attenuated, their course being accelerated. Their size is small and they seem to be not deeply situated; and even when suppuration takes place, there is not much destruction of the cutis. Consequently the scar is superficial and not depressed or pitted. When the treatment is begun after the eruption has progressed to the vesicular stage, the vesicles dry up without going through the pustular stage with the result that the evolution of the disease is shortened and the scars are less prominent and not depressed. In severe cases the vesicles may become cloudy or opaque without the contents becoming frank pus. Here also the final result is as in modified or confluent cases, to the advantage of the patient, that the scars are not depressed and no disfigurement results. If the patient comes under treatment at a stage when there are already fully developed vesicles with a few pustules, then the further development of the vesicles is arrested and the pustules do not cause much destruction of tissue with the result that the patient escapes the much dreaded disfigurement and unsightly deep scars. It is common for the pustules to rupture mechanically or spontaneously before desiccation and only rarely they dry up without bursting. But with this treatment, the vesicles and pustules, except at the areas of pressure, do not generally rupture, but desiccate and incrust, the contents having been absorbed. Probably this is due to the rapid absorption of the contents of the vesicles and pustules under liver therapy so that the lesions become soft instead of being usually tense and full. In some cases, fresh crops of papules appear after the commencement of the treatment. They not only do not go through the usual course of vesicles, pustules, etc., but resolve rapidly and dry up. The decrustation also takes place in a surprisingly short time. Thus the treatment by injections of liver extract modifies the disease definitely at whatever stage the treatment is begun, shortens its course and arrests the further development or aborts the usual evolution of the eruption. The time taken for desiccation, incrustation and decrustation is also shortened. All the symptoms, such as the general uneasiness, malaise, restlessness, retching nausea, vomiting, insomnia, headache, backache, itching, etc., are lessened with the very first injection and disappear in two or three days. The patient recovers his feeling of well-being though the eruptions on the body still persist. It is uncommon for the secondary fever to develop. A boy under treatment when questioned how he felt replied that he had no kind of suffering and felt well as to go out, play and attend school if he were permitted. The erythema around the vesicles and pustules also disappear much sooner than in untreated cases. With the exception of severe unmodified and confluent types all the patients were able to take their baths in about a week as all the lesions had become incrusted and begun to decrust by that time. Another interesting feature of the liver treatment is that almost all the patients felt as well as they were before the attack and some even better and stronger with increased weight. No one felt weaker, exhausted or run down. To summarise, the changes produced

are:—that the pace of the march of the lesions is quickened; that the tissue reaction to the irritation caused by the virus is much reduced and sometimes even to insignificance; that the size of the lesion is dwarfed; that the lesions appear to be superficial and not deeply situated in the skin; that the eruption does not leave behind depressed or pitted scars known as pock-markings of some writers; that the cases that have advanced to pustulation do not form abscesses as usual but become granulomata leaving behind small upheavals which look like warts on decrustation and that the general symptoms and uneasiness of the patient are much lessened.

It is difficult to explain how the liver acts in attenuating the lesions and accelerating the course of smallpox. But there are certain facts that stand out which may throw some light on this.

1. In every disease and particularly in infectious diseases, the degree of resistance of the individual is an important factor influencing the disease course and its termination. The higher the power of resistance of the individual the sooner the virus is overpowered with consequent predominance of reparative processes over those of destructive. The liver extract perhaps acts by increasing the power of resistance of the patient, who is thus enabled to withstand the attack and come out victorious. Prof. GÆNSSLEN, who was the first to produce reliable injectable extract of the liver, states that the injections of the liver have, "a beneficial influence in strengthening the organism." The same is, in my experience, with the smallpox cases. Many of the patients have expressed that they felt very strong and healthy after two or three injections of the liver.

2. In fatal cases of smallpox, the liver is found to be enlarged which is at times very pronounced and soft. The external and out surfaces are pale. Almost every writer makes mention of degenerating changes in the liver varying from cloudy swelling to marked fatty degeneration. Congestion with migration of white blood corpuscles and swollen capillary endothelial cells, fatty degeneration and coagulation necrosis are other changes described. The bone marrow shows pea-sized greyish nodules made up of epithelioid cells and focal necrosis. The cellular elements of the bone marrow are said to show changes according to the type and severity of the disease. There is also toxic inhibition of the blood-forming elements and reduction in the number of the erythrocytes. The liver extract is known to stimulate both liver and bone marrow to activity and support them. Liver as a detoxicating agent perhaps bears the brunt of the attack. The liver of persons that died of postarsenobenzol exfoliative dermatitis shows more or less the same changes and in the latter condition injections of liver extract admittedly plays a very important part in its successful treatment. Thus liver extract may be acting by supporting the liver and stimulating the bone marrow.

3. Liver extract (Campolon), according to Prof. GÆNSSLEN, promotes coagulation of blood *in vivo* and is a powerful hæmostatic. The toxæmia of smallpox causes imperfect clotting of blood and so liver extract may be a valuable remedy in the treatment of hæmorrhagic smallpox which is usually fatal.

### CASE REPORTS:

Case 1. A male, 58 years old, vaccinated in childhood, was attending the veneral outpatient with vitreous opacities, high blood pressure and strong positive blood Wasserman. He had an injection of bismuth and one of arsenic. When he came back for the second arsenic injection on 4-2-35 he had a maculo-erythematous eruption extending from scalp to toe. Though every part of the body was affected the rash was more in evidence on the face, back and extensor aspects, but none in the axillæ and flexures of the groin. Suspecting it to be the cutaneous reaction of arsenic therapy he was given at once 10 c.cs. of sodium thiosulphate 10% solution intravenously and calcium lactate and alkalies by mouth. Next day he was unable to move about, as the rash had extended to the soles and palms. The earlier lesions were just becoming papular. At once 2 c.c. Campolon was given intramuscularly and the next day the erythema had almost gone and the rash, too, on the whole, had subsided. The Campolon was continued daily for five days and the rash had completely disappeared. On the sixth day liver was not given and on the seventh a fresh crop of macules appeared. With the very next injection the fresh crop faded. In the beginning he had a fair amount of itching which became less after the first injection and disappeared in a day or two. The patient had an uninterrupted recovery and his general health was much better after the attack than what it was before. The few macules which became papules dried up and decrusted, and the pocks left no visible scars on his body. The rash in this case was so extensive that but for the treatment, it would have gone to the confluent type.

Case 2. A nurse 22 years old, vaccinated successfully in childhood and revaccinated a number of times. Fever of 101°F. for a day preceeded by slight headache, backache, nausea and general uneasiness for a couple of days. On the third day rash appeared and the fever came down. The next day when the patient was seen, there were a few vesicles with an erythematous areola and a few papules. Five intramuscular injections of Campolon 2 c.cs. each were given daily. There was no secondary fever. Three or four hours after the first injection pain and headache subsided and the patient slept fairly well. From the next day the vesicles began to subside, the red areola disappearing first. The day after the first injection

a few more papules appeared, which dried up the very next day. From that day onwards the patient got on comfortably well and had no feeling that she was ill. By the fifth day decrustation started and two days later it was complete. At the end of the illness she felt stronger and gained five pounds in weight. No depressed scars nor pittings were left.

Case 3. A boy, aged 14, vaccinated successfully in childhood. High fever with the usual attendant headache, backache, nausea, vomiting, constipation, etc. for three days. On the evening of the third day, a few papules appeared. On the fourth day, he had a fairly closely distributed rash all over the body more marked on the trunk and limbs, less on face, palms and soles. From that day onwards 2 c.c. Campolon was injected every day intramuscularly for six days. Two days after the first injection, a fresh crop appeared more on the face which did not develop further. The itching was worse on the second day after injection and the patient was restless and sleepless with a feeling of burning sensation all over the body. From the third day onwards, itching subsided, general condition improved and the patient felt comfortable. The erythmatous base disappeared first, the vesicles did not become pustules although some were cloudy. Six days after the initial injection, most of the vesicles had subsided. The papules and macules dried up and scabbed over. On the seventh day, desiccation and incrustation were complete and decrustation started. This boy after the attack appeared very much changed for the better. The scars were only superficial. This was a fairly severe case; and now fifty days after the onset of the fever many of the scars have faded away.

Case 4. A female, aged 30, with marks of successful vaccination. Had fever for about three days; and eruptions came out on the morning after the last day of the fever. The patient was seen on the fifth day when she had vesicles and papules fairly freely distributed all over the body, but more on the face, back, and the distal half of the limbs including the palms and soles. Campolon 2 c.c. intramuscularly was given daily for five days. The very next day after the first injection, the general appearance of the patient improved and the pain, uneasiness and other discomforts disappeared. The patient who took the injection on the first day with great reluctance volunteered herself for the second injection. The red areola began to disappear after the first injection. By the third day the vesicles almost dried up and turned black. On the sixth day, decrustation started which was complete by the ninth day. There was no secondary fever; nor were there any depressed scars.

Case 5. Male, 25 years old, vaccinated, returning from Rangoon. While leaving Burma he had fever which continued for three days. On the fourth morning in the steamer he noticed the rash coming out. He arrived at Vizagapatam on the sixth day. The same evening he was seen when he had a generalised papular rash with a few vesicles here and there. Though fairly equally distributed the rash was more marked on the face. Two c.c. of Campolon was injected intramuscularly. Next day all the papules dried up and became black. The patient felt so well that he refused to take any more injections. In another two days decrustation was complete.

Case 6. A boy of 14 years. He was successfully vaccinated as a child, revaccinated once or twice unsuccessfully, and successfully 17 days ago. The boy was attending school and did not feel ill; nor did he have any pain, uneasiness, or other discomforts. Seventeenth day after the last revaccination, a papule was noticed at the root of the neck. Next day a few more appeared and on the third day the rash was more or less generalised but less on the face. On the fourth day, he had some papules and many vesicles of which a few were turning to be pustular. Campolon 2 c.c. intramuscularly was given consecutively for six days. The very next day, after the first injection, the face became clear and itching subsided. From the third day of the injection, the patient's general condition was so improved that he felt completely well. The papules desiccated and blackened in three days. The vesicles were dried up in six days without being transformed into pustules. A few lesions that were cloudy did not become abscesses and took two days more to dry up. There was neither pitting nor deep scarring.

Case 7. A boy of 10 years, not vaccinated. Fever for four or five days with pain all over the body, headache, nausea, vomiting, etc. He was admitted in the hospital on the 14th March, 1935, with a temperature of 105°F. delirious and restless. The next day the fever was slowly going down and a few papules were erupted. In spite of the going down of the temperature the patient was very toxic, restless and unstable with a low muttering delirium. On the sixteenth morning there was a generalised thick rash more marked on the face, palm and soles. Generalised lymphadenitis was evident. For the first two days 1 c.c. liver extract was given. Delirium, pain in the body and headache disappeared. Face appeared brighter though weak. From the 18th to the 23rd both days inclusive 2 c.c. Campolon intramuscularly was given each day. On the 18th, the face was covered with the rash, confluent type, and still more were coming. On the 19th, the whole body was a mass of eruption. After the injection no massage of the injected region was possible as there was no free skin over the area. The patient was unable to sit up, had difficulty in swallowing and had no appetite. On the 20th, many of the papules became vesicles and afterwards no more crops appeared. But the patient continued to be toxic, restless and semiconscious till the 23rd, when the whole face became a mass of vesicles and some of them ulcerated by rubbing. On the 24th, eruption on the face began to dry up and some of the later papules scabbed over and decrustation started. He developed a few bullæ on the trunk and limbs. On the 1st April, 1935, most of the crusts fell off leaving behind superficial scars. It took another fortnight for the completion of decrustation and the hands and feet exfoliated. During convalescence he was feeling strong, his appetite improved and had an uninterrupted recovery.

Case 8. An adult male, 22 years, not vaccinated. High fever with severe pain in the body and headache for four days. Rash appeared on the 14th March, 1935. Patient was seen on the 16th March, 1935, when his whole body from scalp to toe was covered with vesicles of varying size. There was not even an inch of space where the rash was not present. Some were coalescing and becoming confluent. The whole body was swollen particularly the limbs. Patient was unable to get up and even to turn from side to side. He was semiconscious and very toxic. From the 16th to the 23rd March, 1935, Campolon 2 c.c. intramuscularly was given daily except on the 22nd. The very next day after the first injection the patient's face became clear and bright. His general condition appeared better. The general œdema of the subcutaneous tissue was less but still marked on the forearms, hands, legs and feet. On the forearms and the dorsum of the hands, large bullæ were seen due to the coalescing of the pocks. The general condition of the patient began to improve day by

day. The erythema around the vesicles disappeared in a couple of days, and the vesicles did not change to pustules. The appetite improved and the patient was sleeping well. On the 19th, the vesicles began to dry up and crusts were forming. The patient said that he felt no kind of suffering at all. The following day, he was able to sit up, as he felt stronger; and he was bright and cheerful. Incrustation was taking place rapidly and decrustation started. On the 23rd March, 1935, the crusts from face, upper part of trunk, and proximal half of the arms had fallen off leaving superficial thin scars. By the 30th of March, decrustation was complete and the patient felt very much improved in health in spite of the severe confluent type of smallpox. (Figs. I & II.)

Case 9. A female child of 3 years, vaccinated successfully in infancy. Fever for four days, the maximum temperature rising to 104°F. On the second day of fever, a few papules appeared on the chest. On the fourth day, temperature was 104°F. Some of the papules were transformed into vesicles and the rash extended to the face and extremities. On the fifth day, temperature dropped down to 100°F. and the child, when seen, showed papules, vesicles, and one or two pustules distributed discretely over trunk, face and limbs. From that day onwards, intramuscular injections of Campolon 1 c.c. were given daily for five days. The very next day after the first injection, the papules became brownish and the temperature touched the normal line. The vesicles did not grow to their full size. By the eighth day the papules were decrusted and the vesicles dried and scabbed over. On the eleventh day, the decrustation was almost complete and the child was given a bath. The general health of the child improved and in addition a few impetigenous lesions she had also healed.

Case 10. A boy of 5 years in the same house as case 9. Vaccinated successfully in infancy, fever 101°F. and three papules were seen on the neck, chest, and back respectively. This was on the fifth day of the illness of the girl (Case 9). Campolon 1 c.c. intramuscularly was given daily for five days. Temperature became normal on the next day and the papules became brown and crusted. On the third day, the crusts fell off. No fresh lesions developed further. General condition of the child also improved.

Case 11. A boy of 12 years, not vaccinated. Fever for two days; rash appeared on the third day. The eruption was mostly papular and was extensively marked on the face, upper part of the trunk, the proximal ends of the upper extremities, palms and soles. On one fourth day Campolon 2 c.c. was given which was repeated the next day also. Relations of the patient objected to the further treatment. By the second injection the patient was feeling well, the pain and headache having disappeared. This was a confluent type and the patient got through the attack without any untoward occurrence.

Case 12. Mother of case 11, forty-eight years old and vaccinated in childhood. Fever for three days; the rash came out on the fourth day. On the fifth day, when seen, there was a fairly generalised rash which was mostly papular, but some were becoming vesicles. She got two injections of Campolon 2 c.c. each on the fifth and sixth days and then refused further treatment. Though a severe type, even the two injections of liver extract appeared to have done her some good. She was looking brighter after the first injection and all the symptoms of headache, backache and itching had disappeared.

Case 13. An adult woman of 35 years. Fever for three or four days and the rash appeared on the 16th March, 1935. The patient was seen on 21st March, 1935, when she had a generalised but discrete type of rash. All of them were vesicles, some tending to be cloudy. For three days from 21st March, 1935, intramuscular injections of Campolon 2 c.c. were given. After the first dose, itching disappeared and the patient slept well. After the second injection, the patient felt better and the face was brightened. After the third, she felt so well that she was moving about and argued that there was no necessity for any more injections. The pocks did not grow to their full size and the vesicles did not become pustules. Even those that were advanced to be cloudy did not become abscesses. The scars were superficial and on the face there were a few lesions which appeared to be warty on decrustation.

Case 14. Adult male of 20 years. Has marks of successful vaccination and was revaccinated which did not take. Fever for a day or two and eruption broke out on the third day. On the 21st March, 1935, when the patient was seen there were some papules, many vesicles and a few pustules. From that day onwards, daily injections of Campolon 2 c.c. were given for five days except on the 25th. On the 24th March, 1935, the papules became brownish and incrusted. The next day they disappeared completely. The erythema around the pustules also disappeared. On the 24th, some of the vesicles were desiccated and two days later many of the scabs on the face fell off, and the eruptions on the trunk and limbs had incrusted. On the 2nd April, 1935, the patient was completely alright. There were no scars on the face and the few ones on the body were superficial. This patient was suffering from anæsthetic leprosy with cervical lymphadenitis. The general health of the patient improved very much. The hypopigmented patches appeared to be more pigmented and the enlarged glands were considerably reduced in size.

Case 15. A boy of 10 years. He was twice vaccinated unsuccessfully. Fever for a couple of days and the rash broke out on the 20th March, 1935. On the 21st March, 1935, when the patient was seen there were a few papules and one or two vesicles. Campolon 2 c.c. were given immediately and the next day, *i.e.*, on the third day, the papules became black and the vesicles soft and reduced in size. Neither the vesicles showed any further development nor did any fresh rash erupt. The parents objected to further treatment. He showed no scars on later examination.

Case 16. A girl of 10 years, vaccinated in childhood. After two or three days of fever, rash appeared and four days later, when the patient was seen, there were papules, vesicles and a few pustules distributed all over the body. There was generalised pain, uneasiness and itching. On the 21st March, 1935, Campolon 2 c.c. were given. The next day the papules became brownish and Campolon 1 c.c. was repeated. On the 24th March, 1935, the papules were all dried up. The patient felt very much better. Though full treatment was not given, the girl had an uninterrupted recovery and the scars were all superficial except one or two on the face.

Case 17. An adult male of 25 years. Successfully vaccinated in childhood. Fever for three days and rash on the fourth day. On the 21st March, 1935, the patient was first seen when the eruption consisted of some papules, many vesicles, and a few pustules, which were thickly distributed all over the body. On the 21st and 22nd

FIG. 1

FIG. 2

Figures (1) & (2) represent case (8). The photos were taken fiftyfive days after the onset of fever. Scars are superficial and some of them have already disappeared.

FIG. 3

FIG. 4

Figures (3) & (4) represent case (25). The photos were taken forty days after the onset of fever. Note that the scars are all superficial.

March, Campolon 2 c.c. a day was given; but the patient refused further treatment. He was complaining of burning sensation after the liver injections. In these two days, he became brighter; pain, uneasiness and itching having disappeared and he began to sleep well. He recovered eventually, but showed deep scars and had developed secondary abscesses as a complication.

Case 18. An infant boy of 8 months—son of case 17. Vaccinated two months ago and showed one small scar. Had fever for a couple of days with vomiting and on the 22nd March, 1935, a papular rash was just appearing on the face, upper part of the chest and arms. The eruption had an erythematous background. Campolon 1 c.c. was given. The child had diarrhœa and further treatment was objected to, but even the one injection of Compolon had a dramatic effect. On the 24th, the child appeared much better and the papules turned black. In a couple of days, decrustation was complete, leaving behind no scars.

Cases 16 to 18 were in the same house.

Case 19. A girl of 3 years, vaccinated successfully in infancy. Fever for two days and on the third day the rash was said to have come out. In the evening of that day (26-3-35), the child was seen when she had a very discrete papular rash, with a few vesicles. The eruption was distributed on the face, lower abdomen, and hands. Campolon 1 c.c. was given. By the next morning some more pocks appeared. Campolon 1 c.c. was repeated. On the 28th and 30th, Campolon 2 c.c. was injected. The lesions on the face faded, desiccation having taken place in some and decrustation in a few others. Decrustation was complete by the first of April and the child also got rid of impetigo from which she was suffering for some time.

Case 20. Adult male of 44 years. Vaccinated successfully in childhood and revaccinated unsuccessfully recently (21-2-35). Uneasiness, malaise and headache for a day and on the morning of the 27th March, 1935, three or four vesicles were noticed on the lower abdomen and left arm. Campolon 2 c.c. was given. Temperature in the evening went up to 102°F. From the 27th to the 3rd April injections of Campolon 2 c.c. were given daily except on the 30th March, when 4 c.c. were given. On the 29th, a few more eruptions came out. Every one of the lesion was a vesicle which was round and shining with a red areola all round. Temperature continued till the 2nd April when it became normal. It was varying from 90°F. to 102°F. in the mornings and 102°F. to 103.4°F. in the evenings. More eruptions used to break out daily and the last crop was papular and that was the first to dry up. The distribution of the rash was mostly on the trunk, worse on the lower part; a fair number on the face, arms and hands and a few on the legs. The face was slightly swollen at the height of the disease. He slept indifferently, but his appetite continued to be good. From the 1st April, 1935, he became brighter and many of the vesicles became pustules though they did not attain their full size and they were not tense but soft. The papules that had erupted last were the first to clear. The vesicles first lost their erythematous base, then shrank, desiccated, incrusted and decrusted. The pustules also went through the same process. This was the one case which appeared more or less to run its course in spite of the treatment. The attack was atypical. The scars were superficial and the general condition of the patient was as if he did not go through an attack of smallpox.

Case 21. A girl of 14 years unvaccinated. Fever for four or five days with severe headache, backache, pain all over the body, loss of appetite, retching and vomiting She was also delirious. Rash first appeared on the 26th March. The patient was seen on the 28th, when there was a closely set generalised papular rash intensely marked on the face and distal parts of the limbs. Hands, soles and mouth were also full. Nausea, vomiting, headache, backache, nasopharyngeal catarrh and cough continued. The girl looked very ill and toxic. Intramuscular injections of Campolon 2 c.c. were given daily from the 28th to 31st March, when further treatment was refused. On the 29th, the patient looked brighter, nausea and vomiting were better, itching was much less, but she was weak and delirious. Lachrymation became evident as the eye was also involved. On the 30th, the pocks were becoming vesicular. Nausea and vomiting stopped, and the eye condition improved with boric wash and argyrol drops. Diarrhœa had set in. On the 31st, most of the rash became vesicles but smaller in size. Diarrhœa stopped but there was no appetite. On the whole, she felt better though sleepless. The patient complained of burning sensation all over the body. On the 1st April, 1935, all the lesions became vesicles and those on the face confluent. Sleeplessness and general uneasiness continued. Swallowing was difficult. On the 4th April, the vesicles were subsiding without becoming pustules followed by an uninterrupted recovery. Even with four injections of Campolon at the beginning, the eruption subsided without going on to pustulation though the attack was of a severe confluent type. The scars were all superficial without pitting.

Case 22. A female, 18 years old and three months, after confinement with a run down general health. Fever up to 105°F. to 106°F. continuously for five days. Intolerable aches all over the body besides headache and backache, nausea, vomiting and constipation. On the sixth day (29-3-35), a generalised finely papular and very closely set rash broke out all over the body. The rash was very intense on the face and distal halves of the extremities. Upper part of the chest and neck did not present many eruptions. Nausea, vomiting and retching were continuous throughout. Campolon, 2 c.c. intramuscularly, was given daily from the 29th March to 5th April, 1935, except on the 4th April; and on the 31st March, and the 3rd April, 4 c.c. were given. On the 30th the face appeared to be a little clear, the patient having slept well the previous night. There was a peculiar bad smell from the mouth due to the ulceration of the pocks. On the 31st, the right eye was inflamed as there were one or two vesicles on the conjunctiva. The papules were becoming vesicles but were not full and showed umbilication very early. On the 1st April, 1935, the patient was a little bright. Some of the papules subsided without becoming vesicles. She slept fairly well. The next day the breathing was hurried and there was also cough. The eruption was decidedly on the wane though some were becoming vesicular. Slight œdema of the lower lip was noticed on 3rd April, 1935, almost all the eruptions flattened out and could not be recognised even by the feel. On the face, hands and feet there were vesicles but very soft and only partially full. The patient was still toxic, restless and delirious with rapid breathing. Feeding was very difficult on account of the difficulty of swallowing. Throat was full of mucus. She developed a habit of continuously rubbing the face with the result that the skin peeled off and the face superficially ulcerated. On the morning of the 6th April, the general condition appeared slightly better but the pulse was small, rapid and thready. The condi-

tion of the patient was very low and continued to move down hill and eventually she died at 4 a.m. on the 7th April, 1935, tenth day after the appearance of the rash. The skin was parchment-like and there was no eruption to be seen or felt except in the hands and feet.

This is a specially severe and rare variety of the confluent type of smallpox. MacCombie described this variety thus:—"In some of the completely confluent cases, the vesicles at the usual period of full vesicular development are flat, with very shallow central depressions, only partially filled with serum, not transluscent, but of a doughy or pasty hue; there is not much, if any, subcutaneous œdema; the features, though blurred, are recognisable; the eyelids are not œdematous; there is little swelling of the face, hands or feet other than that due to the confluent vesicular eruption; the skin is rough and flat, presenting the appearance of coarse parchment. This form of confluent smallpox is usually fatal, death taking place from the ninth to the eleventh day of the disease."

Case 23. A boy of 10 years vaccinated successfully in childhood. Fever 100°F. for a day and on the second day a few papules were noticed on the chest, back and thighs. The third day the temperature rose to 102°F. and some of the papules were changing into vesicles. From this day Campolon 1.5 c.c. was given for two days and 2 c.c. for three days. Fourth day the temperature went up to 103°F. and a fresh crop of papules appeared on the face. Patient looked very ill. On the fifth day temperature came down to 99°F. and remained normal afterwards. Eruption on the face disappeared and the vesicles on the back and thighs became cloudy. By the seventh day all the pocks dried up and crusted over. On the ninth day, decrustation was proceeding rapidly and the boy had his first bath.

Case 24. Male, 34 years old. Vaccinated in childhood. Aeroplane engineer by profession. Fever with severe headache, backache, malaise, uneasiness, nausea, vomiting, etc., continuously for six days. Fever is said to have reached its fastigium, 107.3°F. on the third day. On the sixth day, 13th April, 1935, rash appeared particularly on the face. On the 17th April, 1935, the patient was seen when he had a profuse rash mostly vesicles and a few papules on the face and papules on the trunk and limbs which were fairly equally distributed. A few of these were becoming vesicles and some appeared blackened. There were flattened brownish lesions on the palms and soles. Burning sensation and slight itching of the whole body were also present. 4 c.c. Campolon was given which was repeated for two more days and then 2 c.c. for two days and finally 4 c.c. on the 22nd April. After the first injection the patient slept the whole night and a good portion also of the day after. Pain, headache and uneasiness all disappeared. Some of the papules became black and the vesicles looked smaller and soft. The next day he felt normal. Face was bright and he volunteered the information that he felt so well to move about, fly and even run a hundred yards' race. Most of the vesicles had desiccated and the papules in general dried up and incrusted. On the 24th April, 1935, all the lesions had dried and decrustation was proceeding. The next day he had his first bath and decrustation was practically complete on the face, leaving wart-like growths behind. This patient clearly demonstrated that the lesions were more marked over areas of pressure. There were more lesions aggregated together over the pressure points of the goggles which he is accustomed to wear.

Case 25. A male of 22 years. Has a scar on the right arm said to be vaccination mark. Fever for five days with the usual accompaniments and delirium. On the 29th March, 1935, eruption broke out. The patient was seen on the 30th March, 1935, when he presented a papular rash intensely marked on the face, back and arms. Some were seen on the palms and soles also. The patient was very toxic and unable to stand up. From 30th March, 1935 to 3rd April, 1935, liver extract injectable was given daily 2 c.c. on the 30th March, 1st and 2nd April; and 5 c.c. on the 31st March and 3rd April. On the 31st March, 1935, the papules were still coming out and the patient continued to be toxic and delirious. The next day he was practically bed-ridden and the rash was still on the increase. The tongue and mouth were studded with pocks. On the 2nd April, 1935, condition was just the same. The mucous membrane of the mouth and tongue was a mass of ulcers. Tongue had to be kept protruded with the saliva dribbling. There was difficulty to swallow. On the 3rd April, 1935, almost all the lesions became vesicles though they never developed to their full size. The day after, œdema was noticed on the face and he complained of burning sensation all over the body. Further treatment was refused. The next day œdema began to disappear. The condition of the mouth was very much improved and swallowing became less and less difficult. On the whole he felt better and the burning sensation also disappeared. Some of the vesicles were transformed into opaque ones and then all became desiccated and incrusted. Decrustation then began. Although the patient had only five injections of liver extract, the lesions did not develop into fully formed pustules with the result that no depressed scars or pits were left; nor were there any secondary boils or abscesses complicating the course of the disease. (Figs iii and iv.)

Case 26. A female, 20 years old, vaccinated successfully in childhood. Fever for five days with headache and backache. Rash appeared on the 28th March, 1935, The patient was seen on the 30th March, 1935, when she had vesicles and pustules with umbilication which were distributed discretely all over. A few were seen on the palms, soles and palate. From the 30th, five intramuscular injections of liver extract injectable were given daily. The day after the first injection, the patient began to feel comfortable. By 3rd April, 1935, decrustation was very much advanced and two days later the patient had her bath.

Case 27. A female of 38 years, vaccinated in childhood. Fever for three or four days and a few eruptions appeared on the evening of 31st morning. The patient was first seen on the 4th April, 1935, when there were a few papules, vesicles and pustules. She was still complaining of pain and general uneasiness. Eruption was discrete but scattered all over, palms, soles and palate also having their share. 4 c.c. liver extract injectable was given and two more injections with 2 c.c. of the same extract were repeated the next two days. On the 5th April, 1935, the papules became black and the patient volunteered the information that she felt quite fit. The next day all the lesions had dried up and in a couple of days descrustation became complete. The scars were all thin and superficial.

Case 28. A male, aged 28. Vaccinated successfully in childhood. Fever for three days and the rash broke out on the 2nd April, 1935. The patient was seen on the 7th April, 1935, when he presented fully developed vesicles all over the body which were more marked on the face. Some of the vesicles were becoming cloudy. He had still

uneasiness, headache and weakness with burning sensation. 5 c.c. liver extract injectable was given intramuscularly which was repeated the following day; two more injections of 2 c.c. each on the next two days. The day after the first injection the patient felt comfortable; uneasiness, headache and burning sensation having disappeared. On the 9th April, 1935, the papules dried up and blackened and many of the other pocks became incrusted. On the 11th April, 1935, decrustation had fairly advanced and the patient felt normal. Scarring was superficial.

## Discussion

In evaluating the usefulness of any particular drug or line of treatment in smallpox, great discriminating care should be taken before drawing conclusions as there are many factors which modify an attack of smallpox with or without treatment. The most important of them are:—

1. *The nature of the epidemic.* Smallpox is known to prevail in epidemic form in varying types of severity. The severity of an epidemic is determined by the extent of mortality and the incidence of confluent and hæmorrhagic cases. Mild epidemics were known to exist even to older writers. Van Swieton (1759), Sydenham (1771), Jenner (1796) and others have described it. So the question could naturally be raised whether the cases under report came under the category of a mild epidemic. But the epidemic prevailing in Vizagapatam at the time of writing is not only not mild but on the contrary a severe one as may be determined by the available mortality figures and by the occurrence of severe and confluent cases that came even under my observation. Till 30-4-35 there were 574 attacks and 133 deaths registered giving a mortality rate of 23.4%. Of the total attacks 286 were confluent cases. Thus it is evident that the epidemic was a severe one.

2. *Vaccination.* Those who were successfully vaccinated and re-vaccinated when attacked by the disease generally run a modified course though it is not always true. Certainly many of our cases were successfully vaccinated in their childhood and in a large number the disease was modified or aborted, but still there were others who had the unmodified or confluent type of the disease.

Even in those modified cases, the evolution of the disease was not according to time-table, but accelerated and the progress of the eruption from stage to stage was also found wanting. Further, injections of liver extract at the very outset, *i.e.*, when the rash was just coming out and in the papular stage, had arrested the disease so completely, that the eruption did not go through the vesicular and pustular stages. On the other hand, the papules dried up and appeared to be crowned with brownish or black crusts. So the question of modification by the previous successful vaccination does not minimise the value of liver therapy.

3. *The diagnosis of the condition.* When an epidemic of smallpox is prevailing, cases of chickenpox are likely to be diagnosed as modified smallpox. There is no doubt as to the nature of the present epidemic as pointed out above. At the same time I would like to point out that injections of liver extract are equally effective and beneficial in the treatment of chickenpox as well. I suggest that liver extract may be tried in measles, vaccinia, rubella and scarlet fever.

## Conclusion

All the workers and writers on the subject are of opinion that there is nothing to prevent the scarring, pitting and disfigurement caused by an attack of unmodified smallpox, be it discrete or confluent. Gregory in the nineteenth century bemoaned that there was no method to prevent pitting and scarring. Even to-day the same sorrowful state continues. Schamberg and Kolmer (1928) write, " From the unmodified form of the disease, disfigurement is as great and as much dreaded at the present time as it was in the days of our ancestors, and it seems probable that this continues to be the case until some agent capable of causing the eruption to abort before it reaches the pustular stage is found, for the suppurative process at this stage is attended with destruction of cutaneous tissue and consequently scarring must follow." I am glad, in the injectable liver extract, we have an agent which is capable of causing the eruption to abort without going through the pustular stage or without causing destruction of cutaneous tissue and consequent scarring or pitting even when it became pustular.

## Summary

1. A series of twenty-eight cases of smallpox treated with liver extract is reported.

2. The liver treatment modifies the course of the disease, shortens the duration, aborts the eruption and avoids the consequent disfiguration from deep scarring and pitting.

3. The systemic disturbances disappear soon and the patient goes through the attack with comparative comfort.

4. None of the cases reported showed itching at the time of incrustation, nor developed boils and subcutaneous abscesses, secondary septic fever, toxic rash or phlebitis and thrombosis, the usual complications of untreated smallpox cases.

5. Two brands of liver extract were tried. (1) Campolon of Messrs. Bayer-Meister-Lucius, Germany and (2) Liver extract injectable of Messrs. Bengal Chemical and Pharmaceutical Works, Ltd., Calcutta. Both gave equally good results.

ACKNOWLEDGMENT

I am indebted to Messrs. Havero Trading Co., Bombay, the representatives of Messrs. Bayer-Meister-Lucius, and Messrs. Bengal Chemical and Pharmaceutical Works, Ltd., Calcutta, for supplying Campolon and liver extract injectable respectively, in sufficient quantities to be tried on a number of cases, thus enabling me to conduct these experiments and to make the observations made above. I have also great pleasure in thanking my clinical assistant Dr. V. K. Menon, the special smallpox officer, Dr. M. Narasimha Rao and his staff and the Medical Officer of Health Dr. T. S. Adisubramaniam for their kind and sympathetic co-operation. My greatful thanks are also due to Dr. C. Ramamurty and Dr. N. G. Pandali of the Vizagapatam Medical College, for their valuable help and encouragement and to Dr. P. Kesavaswamy, the Radiologist of the King George Hospital, Vizagapatam, for the photos.

REFERENCES

CLIFFORD ALBUTT, SIR and ROLLESTON, H. D., *A System of Medicine*, Vol. II, 1912. Macmillan & Co., Ltd., London.

DAVIDSON, L. S. P., *B. M. J.*, Feb. 13, 1932, p. 269.

GAENSSLE, N. M., *Deutsch. med. Wochenschrift*, No. 46, 1931.

GOODALL, E. W., *A Text-Book of Infectious Diseases*, 1928. H. K. Lewis & Co., Ltd., London.

KER'S Infectious Diseases, revised by CLAUDE RUNDLE, 1929. Oxford University Press.

OSLER WILLIAM, SIR and MCCRAAE, T., *Modern Medicine*, Vol. II, 1926, Henry Kimpton, London.

PATEL, P. T., *Infectious Diseases and other Fevers in India*, 1929, Butterworth & Co. (India), Ltd., Cal.

RICKETTS, T. F. and BYLES, J. B., *The Diagnosis of Smallpox*, 1908, Cassell & Co., Ltd., London.

ROLLESTON, J. D., *Acute Infectious Diseases*, 1929, William Heinemann, Ltd., London.

SCHAMBERG, J. F. and KOLMER, J. A., *Acute Infectious Diseases*, 1928, Lea and Febiger, Philadelphia.

# CHOLERA KIDNEY

## A Clinical, biochemical and functional study*

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and
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Fifty cases of cholera with anuria have been studied. The majority of them had suppression of urine for a period varying from 24 to 72 hours while in some cases urine being established after temporary suppression was followed by complete anuria and death.

### Analysis of the cases

There are nine cases in which the period of anuria was more than 48 hours' duration and 2 cases in which the period was 108 and 120 hours. In both these last cases urine was established for 5 and 2 days respectively after which there was total suppression of urine and death.

Clinical manifestations:—In majority of these cases, toxic symptoms were pronounced even in cases of anuria of 16 to 20 hours' duration. The main symptoms were restlessness, congested eyes, delirium, dry coated tongue, partial or complete unconsciousness, bleedings from lips, nose and gums, incoherency, hiccough, deep laboured breathing, dyspnœa, tympanitis and burning sensation all over the body.

In mild cases, backache, dry furred tongue, bilious vomiting were present. All these symptoms persisted for varying periods and disappeared in majority of cases by treatment with alkali and glucose resulting in free diuresis excepting those few cases who died in spite of all attempts.

*Urine*:—The urine showed definite changes in all cases. *Quantity* varied a good deal. Generally speaking the quantity gradually increased from day to day but in some instances there came a period of less quantity of urine, partial suppression and also total suppression.

*Specific gravity*:—The initial specific gravity ranged from 1010-1024 only. One case having the specific gravity of 1008. Most of them having specific gravity more towards 1020 than towards 1010. The daily variation of specific gravity was also considerable. This depended mainly on the quantity of urine passed; those having free urine amounting to nearly 40-50 ozs. during 24 hours had specific gravity of 1006 or 1005, vary rarely coming down to so low a figure as 1002.

*Reaction:* It was invariably acid at the beginning. Patients having two or three intravenous injections of alkali, still showing fairly strong acid reaction of urine—urine became alkaline after an average period of 5 days.

*Albumin*:—Albumin was present in all cases. In majority of cases the quantity was not sufficient for estimation.

*Microscopic picture*:—The microscopic finding was very interesting and gave a kaledoscopic picture. The number of hyaline, granular and epithelial casts, which were present in nearly every case, was from 3 or 4 in every field of the microscope to one in every 3 or 4 fields. The changes in number and appearance of these casts were so variable that if two samples were given to one for examination he would not believe that these two samples had been taken from the same patient at an interval of only 6-12 hours. The daily variation was also striking. Casts persisted for three or four days and then gradually disappeared from urine. Pus cells had also been found in many cases. Amongst the crystalline deposits ureter, uric acid, phosphates, oxalates had been very common. Renal and vesical epithelial cells were also found in fair number. Leucocytic casts had also been found.

*Read before the Indian Science Congress, Calcutta Session, January, 1935.

*Blood*:—Blood chemistry of these cases uniformly showed a very high reading of non-protein nitrogen, urea, uric acid and creatinin, so much so that the highest figure obtained had been very considerable. The highest and average figures are given below:—

| | *Maximum* | *Average* | *Normal* |
|---|---|---|---|
| N.P.N. | 225.9 mg. per 100 c.c. of blood | 183.7 | 30 |
| Urea | 112.0 | 41.8 | 12 |
| Uric acid | 35 | 9.1 | 2 |
| Creatinin | 6.3 | 4.3 | 1 |
| Chlorides | 533.3 | 397.3 | 290 |

It is a noticeable feature that in fatal cases the figures went higher and higher in spite of the fact that the patient was passing fair quantity of urine and the condition of urine gradually improving. The following case is cited as example:—

R.—an old man admitted into the hospital with 108 hours' suppression of urine—having delirium, dry-coated tongue and dyspnœa, P/R 120/30., B.P. 142/70.

Blood chemistry showed:—

| | | |
|---|---|---|
| N.P.N. ... | 165 | mgs. per 100 c.c. |
| Urea ... ... | 73.5 | ,, ,, ,, ,, |
| Uric Acid ... | 12.2 | ,, ,, ,, ,, |
| Creatinin ... ... | 4.6 | ,, ,, ,, ,, |

Urine passed after treatment. Two days after, the patient became semi-conscious with incoherent speech, dry tongue, passing 8 oz. of acid urine of 1010 specific gravity which contained hyaline and granular casts about 2 in every field with epithelial cells, pus cells and amorphous urates.

Blood chemistry showed considerable rise than previous figures—being

| | | |
|---|---|---|
| N.P.N. | 218 | mgs. per 100 c.c. of blood |
| Urea | 98 | |
| Uric acid | 16 | |
| Creatinin | 7.5 | |
| Chloride | 466.7 | |

Patient continued to be drowsy, occassional delirium, respiration rising to 48 per minute, a falling blood pressure, passing average quantity of 20 oz. of urine daily for 3 days with few granular casts.

On the sixth day after admission the patient became highly delirious, urine totally suppressed and died. The blood chemistry showed persistent rise of N.P.N. The reading being

| | | |
|---|---|---|
| N.P.N. | 220 | mgms. per 100 c.c. of blood |
| Urea | 90 | |
| Uric acid | 14 | |
| Creatinin | 6.4 | |
| Chloride | 366.7 | |

*Kidney function tests*

These tests were performed after the establishment of urine and when vomiting had stopped.

The water elimination test was greatly impaired sometimes patient passing no urine in the course of three hours after taking a pint of water.

The phenol red pigment excretion was also delayed, the patient often passing the pigment for 12 hours or more.

After a few days, average being 5 days, after the establishment of urine, these tests became normal.

# NUTRITIONAL RESEARCH IN INDIA*

CEDRIC DOVER

*Sussex*

It has been estimated[1] that the food-supply per capita in India is only 0.83 milllon calories (against a requirement of 1.27 million calories), the food-production of the country in normal years being barely sufficient for 66 per cent. of the population. Research on nutrition naturally centres, therefore, round the diet deficiency diseases[2], of which the formation of stone in the bladder and the goitres have received considerable attention. Osteomalacia, a wide-spread disease found most commonly in Kashmir, has also been extensively studied.[3] Col. R. McCarrison and his associates, working at the Pasteur Institute, Coonoor, under the auspices of the Indian Research Fund Association, are responsible for most of the nutritional research in the country, but various universities and the Indian Institute of Science at Bangalore are also contributing to the subject. Since 1930, published work has been reviewed annually by the Society of Biological Chemists, Bangalore, India, in brochures entitled *Biochemical and Allied Research in India*.

The nutritive value of Indian food-stuffs has provided much scope for research. Stewart, Boyd and De have provided comparative analyses and calorific values for Indian food-stuffs[4]; Niyogi and his associates of the Seth Gordhandas Sunderdas Medical College, Bombay, have investigated the nutritive value of certain Indian vegetables[5]; Brahmachari has noted the vitamin value of the common food fats of Bengal[6]; Wats and his colleagues have determined the vitamin C content of various vegetables and fruits which are extensively and cheaply available[7]. McCarrison has discussed a good diet and a bad one, the nutritive value of wheat and other food-grains, and the superiority of whole wheat unleavened bread (known locally as *chapattis*) over white bread as a basal article of diet[8], though it needs to be supplemented with protectve foods. McCarrison's work also includes extensive contributions to vitamin research; with other Indian studies most of it is listed and discussed in Browning's magnificent monograph on the vitamins[9], from which it will be seen that India has made no contribution to research on the vitamins associated with reproductive power. Pal has, however, recently published a note[10] on the effects of vitamin E on the ovaries of young rats. In so far as general works are concerned, McCarrison has published a useful little book entitled *Food*[11], which should be widely translated and read in India. Basu has issued a popular work under the same title[12], as part of an attempt to improve the diet of university students in Bengal. Similar efforts are being made elsewhere, as for example, by Gopalswami in Mysore[13].

The comparative study of Indian diets has not been neglected[14], but is in need of further investigation. Banerji contributes to such an elaboration with a study of dietaries in the United Provinces[15]. Intelligent propaganda for diet alteration, and co-operation with food-producing deparments, such as

1—Das, R. K. *The Industrial Efficiency of India*. P. S. King & Sons, London, 1930.

2.—McCarrison, R. *Trans. 7th Cngr. Far East. Assoc. Trop. Med.*, III, 311-320, 1927; *B. M. J.*, No. 3674, 966-971, and No. 3675, 1009-1015, 1931.

3—Scott, A. C. *Trans. 7th Congr. Far East. Assoc. Trop. Med.*, I, 335-350, 1927; Wilson, D. C. et al *Ind. Journ. Med. Res.*, 1929, *et seq.* (several papers); Vaughan, R. O. *The Purdah System and its Effect on Motherhood*, W. Heffer & Sons, Cambridge, 1928.

4—*Ind. Journ. Med. Res.*, xix, 675-689, 1931.

5—*Ind. Journ. Med. Res.*, xviii, 1931, *et seq.* (several papers).

6—*Ind. Med. Gaz.*, lxvii, 377-380, 1932.

7—*Ind. Med. Gaz.*, lxiv, 79-84, 1929. *Ind. Jour. Med. Res.*, xix, 393-413, 1931; xx, 89-106, 1932.

8—*Ind. Journ. Med. Res.*, xiv, 649-654, 1927; xiv, 631-639, 1927; xvii, 667-691, 1930.

9—*Mon. Rickett-Thompson Res. Lab.*, 1931.

10—*Journ. Ind. Med. Assoc.*, I, 428-429, 1932.

11—MacMillan & Co., Madras, 1928.

12—University of Calcutta, 1930.

13—Report on the Nutritional Value of Hostel Diet Govt. Branch Press, Mysore, 1931.

14—McCarrison, A. *Trans. 7th Congr. Far East. Assoc. Trop. Med.*, III, 322-323, 1927.

15—*Ind. Med. Gaz.*, lxiv, 183-186, 1929.

*This note formed part of a memoir on Indian eugenic problems presented to the Third International Congress of Eugenics, New York, 1932.

those of agriculture and fisheries, are needed to give a practical direction to work of this type. Indian agriculture has made rapid progress in the last few years, but the related subject of fisheries, though of outstanding importance in relation to the physique of the masses, has been grossly neglected[16].

More attention should also be paid to the quantitative aspect of diet surveys. The investigation of family budgests provides a method by which economists and social workers can contribute to quantitive assessments in nutritional research. In passing, it may be added that such papers as those of TUPAS, BELMONTE and CABRERA on the work of a school nutrition clinic in Manila[17], and of CLARK on West Indian diets[18], comparative study of tropical diets would be of considerable interest. FIELD has found, for example, that immigrant Indians in Malaya show less disease resistance, owing to vitamin A starvation, than Malayan or Chinese[19].

The role of nutrition in maternal and child welfare needs more specific attention than general diet surveys or welfare investigations provide. This comment is suggested by the work of BALFOUR[20] and TALPADE[21], who support the general experience that a high percentage of feeble and premature births is correlated with parental dietary deficiency. Such research is dependant, however, on co-operation and a proper appreciation of mutual needs. Social workers, for instance, could provide nutritional research with the data afforded by surveys; students of nutrition could not only evaluate this data, but make more positive contributions to the improvement of maternal and infant health, which would be utilised by social workers. The growth of children also requires to be thoroughly investigated in relation to nutritional conditions. A Central Institute of Human Nutrition, with a Director and a competent staff, as recommended by the Agricultural (1928) and Labour (1931) Commissions, would undoubtedly extend the scope of nutritional activities, but it should form part of a comprehensive and centralised public health policy[22].

16—DOVER, C. *Calcutta Review*, January, 1932, 41-59.
17—*Journ. Philipp. Is. Med. Assoc.*, x, 333-346, 1930.
18—*Admin. Rep. Surgeon-General, Trindad and Tobago*, 53-56, 1931.
19—*Malayan Med. Journ.*, vi, 46-53, 1931.
20—*Ind. Med. Gaz.*, lxv, 630-636, 1930.
21—*Ind. Journ. Med. Res.*, xix, 485-489, 1931.
22—C.DOVER: Public Health in India—*Journ. Ind. Med. Assoc.* (in press); The Centralisation of Welfare Activities in India—*Ind. Med. Gaz.* (in press); Maternal and Child Welfare in India—*Mother and Child*, v, 355-389, 1935; Eugenic Legislation in India—*Quarterly Review*, January, 1935.

# WELFARE WORK IN AMERICA*

RUTH YOUNG, M.D.

I have been asked to speak on welfare work in America by which, I assume, is meant child-welfare work. I do not think that such a subject can have more than an academic interest for us unless we relate it up to what is being done in India. I therefore purpose to deal with the subject by the method of contrast. Most of you here have some idea as to how child-welfare work is carried on in India. It will be useful to see what the differences in methods are and in what ways, if any, these methods should be altered here to make them more like those in the States. First of all, I should like to state clearly that I do not believe methods should be altered just because other methods have proved more successful elsewhere. There has been far too much slavish copying of foreign ideas and far too little patient endeavour to think out systems which are suited to this country. A system which is suited to the continent of America is not necessarily suited to India. What is needed is to take the best of any country and use it and adapt it to our own needs. I feel more impelled to say this because I saw in China what I consider was an excessive amount of copying of American methods there. It is a common fault, too, to think that because certain lines of action in public health are necessary in the West, the same lines should be adopted in the East, without reference to the many factors concerned. It takes much courage, wisdom and foresightedness to decide where advances should be made and where they are not possible, and this is a problem to which the medical profession in India has not addressed itself with much vigour. I think many of you will agree that health visitors have a place in public health work in India, but what exactly that place is, and how the future health visitor is to be prepared for her task, has been far too little considered.

I wish to say something about the training of health workers in the States as well as describe their work. It is obvious that the kind of work undertaken must depend, to some extent, on what form of training the worker has received. In addition, my deputation to the States was for the express purpose of studying methods of training and, therefore, I should like to take this opportunity of passing on the results of my study.

It will be as well to divide our subject into two portions and deal first with the question of training and secondly, with the activities of health visitors. I may say that I shall here use the words health visitor and public health nurse as interchangeable terms. This is rather on account of the functions they perform than on account of the training received. The scope of a public health nurse in the States is correctly wider, as we shall see later, than that of a health visitor in India, but the majority of the activities undertaken here occupy an important place in a public health nurse's work in the States. Training is, however, a different case and the terms are scarcely interchangeable from that point of view. The contrast between the health visitor in India and the public health nurse in America is nowhere more striking than in the methods of training adopted. The training here followed lines which had been laid down in England and which were suited to India, because full training in nursing was not insisted on. Since the time when the first training school was established in India, the tendency in England has been increasingly to encourage health workers to take a full nursing course and those who do not do so have to spend a much longer time than formerly in fitting themselves to be health visitors. Things have not developed on these lines in India and the present position is that the majority of entrants to health visitor training schools are not trained nurses.

In the United States a public health nurse is a *nurse* first and foremost and there are no women public health workers who are not nurses. One of the hardest things I had to do in the States was to make people understand that in India public health workers could and did useful work without being trained nurses. The whole idea was so foreign to the profession there that they could not comprehend its existence, and I was hard put to it to explain the

*Read at the XI All-India Medical Conference; Delhi, 1934.

position, the more so that Americans naturally failed to understand the prejudice existing in India against nursing as a profession. The health worker in America, starts her training as an ordinary nurse and she need not decide when she enters a hospital what form of nursing she may ultimately practise—public health, teaching work, administration, mental nursing and so on. In the majority of cases, the nurse who elects to go in for public health after completion of her nursing course, takes a post-graduate course in public health work. This is done in two ways (1) the nurse joins an educational institution where she can take a suitable course, or (2) she joins an association which is undertaking public health work and learns at the same time. The latter method of training may seem curious to us here, but it has its advantages and it is rendered possible by the nature of the organisation of the Association concerned. I shall revert to that again later, but here emphasise the point that in large towns such associations employ a number of specialists and definitely plan to educate their staffs. It was interesting to observe this method of work. Not only the newly recruited members of an association, but those who have been working in it for some years are expected to continue their education. Definite courses of lectures and reading are planned for them on a variety of subjects, e.g., nutrition and dietetics, mental hygiene, social work, the pre-school child and so on. In addition, all associations employ " supervisors " so that newly joined workers are not left to flounder along by themselves, but are under the direction of trained and tried supervisors. In one case, the number of supervisors to ordinary workers reached the proportion of one to six. Where the nurse joins a course of training in an educational institution, the course resembles to some extent, the courses given in India in content.

A new method of training is, however, being tried out in the States and it was the study of this new method to which the Rockfeller Foundation, specially wished me to apply myself. The general principles on which this new kind of training is founded are that the public health point of view should be introduced to the nurse very early in her training, that the nursing training should contain actual public health work, that less time should be spent on the acquiring of " skills " by the endless repetition of comparatively simple tasks and that certain experiences ordinarily acquired in nursing training are not necessary for public health nurses, e.g., operation room experience. It can easily be seen that this is quite a new view-point in nursing training. It visualises a course in which public health occupies a very fundamental and important position and it is obvious that nurses, who have been trained in such methods, will have an altogether different attitude towards disease. They will regard it as something that is in a great many cases preventable and not inevitable, and naturally they will come to realise that prevention is a better alternative than cure, better for the individual and better and less costly for society and the State.

Such nurses when they come into contact with people in their homes will naturally seek to get this point of view " Across " to those for whom they are caring and the effect after a generation or two will be revolutionary.

This new method of training has one or two corollaries which are worth indicating. In the first place if pupil nurses are to be relieved of the repetition of the many tasks they undertake at present, the hospitals will have to employ larger paid and qualified staffs. This is generally coming about in the States, though the present depression has hindered its advance. The leaders in the nursing profession, however, were very insistent that hospitals should no longer be dependent on pupil nurses for their work as they are now. I think this is a matter to which few of us have given much thought in India, but there is no doubt that pupil nurses are in most hospitals exploited for the hospitals' benefit. The nurses do the nursing of the hospital at very low rates of pay and thus save the funds of the hospital. Those responsible for the direction of hospitals are unwilling to admit this fact, but it *is* a fact and there is no real reason why the hospital should depend on pupil nurses for nursing care when it no longer depends on medical students for medical care. The day will come when this problem will have to be faced in India also, for it is not one which is peculiar to America or England.

The other corollary concerns the previous education of pupil nurses. The standard of previous education is rising and the new points of view in nursing training have much to do with that new standard. In some training schools, pupils admitted must already be graduates of a college; in other cases a hospital co-operates with a college in the training of a pupil and she receives a degree in which her nursing training is reckoned as part of the work in the degree course. This means that nursing as a profession has a much higher academic standard and will attract to its ranks girls of good education and ability.

It is time, however, to pass on to the second part of our subject and I hope I have not wearied you with this consideration of the training of public health workers which is naturally not of much interest to you as to me.

What does the public health nurse *do* when her training is finished and how is child-welfare work carried on in America? Earlier in this paper I made the remark that the public health nurse's work was much wide in its scope than that of a health visitor in India or even in England. She does not restrict herself as is done in India, to antenatal, infant and child care, but in addition she is occupied with school work, following up contacts of contagious diseases, tuberculosis and venereal diseases (in the homes), post-partum care of delivery cases, and actual bed-side nursing in the homes. It was to the latter task that the public health nurse first addressed herself. She undertook the care of sick people in their homes and used the contacts thus made for health teaching among the sick person and his or her relatives. This nursing care was given to people of either sex and any age. When we use the expression public health nurse our attention focuses on the public health part of the phrase and we think of the work as having some connection with hygiene. In America, the connotation is different, however. The stress lies on the word nurse and public health implies not hygiene so much as one available for helping to restore members of the community to health. It was very interesting to note, however, that the nursing part of a public health nurse's work is tending to become less while the preventive and educational part becomes greater. While a few years ago the first contact with a family was invariably through a case of sickness in the home, at the present time the first contact is more likely to be made through the new-born baby, or even the antenatal case. Prenatal care and the care of infants and pre-school children are coming to be regarded as the most essential parts of the public health nurse's work. This is interesting in view of the way in which this department of public health work has been specialised in this country and shows that when we took these things in India we were placing first things first. I feel myself that however desirable it may be to take up other branches of public health work, health visitors will have to give the major portion of their time to mothers and young children for a long time to come.

A complication of the health visitor's work which exists in India but not in America is the midwifery problem. Practically all the midwifery is in the hands of the medical profession and that profession is on the whole against the training of midwives, and jealously guards its privilege of ushering new citizens into the United States. Nurses, therefore, do not receive midwifery training, but they *are* trained in obstetrical nursing. Hence though they do not and *cannot* undertake delivery cases, they attend cases with doctors and do the post-partum care. They also do a good deal of pre-natal care. This work is done in co-operation with a private practitioner or with a hospital. The patient usually pays for the use of post-partum but not the ante-partum care. The training and supervision of indigenous dais, an important and time-consuming part of the health visitor's work in India does not, of course, come into question in the States.

A feature of the work in the States which struck me was that the public health nurse tends to regard the family as a unit and not the individual members of it. Our work here takes cognisance of the mother in the ante- and post-partum state, the infant and the pre-school child. The other members of the family are barely noticed. To consider the family as a whole has great advantages. In the first place, it makes the workers alive to many factors which influence the health of the individual members, e.g., the number in the family, the status of the parents, the earnings of the father and other members, the type of housing and environment and the health of both parents and children. Such factors are usually neglected in India, both in health work and in ordinary medical work, to the detriment of efficiency. All members of the family may at one time or another come under the care of the public health nurse. If the adults, adolescents or school children are in good health they need not require care beyond a periodic overhaul which the nurse tries to secure for them. If anyone falls sick, the care of that individual is taken up either in the shape of bed-side nursing, health teaching or help in attendance at the numerous special clinics which abound in the hospitals. Health workers in America have the advantage also of much help from parallel agencies of all kinds, such as social welfare associations, mental hygiene workers, special hospitals and latterly city relief for unemployed persons and their families on a fairly generous scale.

Record keeping of public health nurses is done on rather an elaborate scale. In consonance with the principle noted above, most of the records are enclosed in a " family folder " which gives all the social and

economic data of the family as a whole. Separate cards are kept for each member of the family and these are distinguished by colours, as a rule, for easy identification. Record keeping is a sterile sort of job unless one uses the records as a basis for ascertaining general facts which again can be used as a basis for appropriate action. On the whole, the use made of records was good though there is a slight tendency to glorify the records themselves rather than their meaning. In all big organisations, statisticians are employed so that the workers have only to ask for certain facts for them to be supplied. This is naturally a great saving of the workers' time and enables them to devote their energies to their real task. I would not help at times envying the workers the amount of clerical help which was at their disposal, so different from what is the case in India where such a lot of valuable data is lost because no one has the time to work on the material.

Some of you will no doubt be awaiting with impatience, a description of the organisation of the work. This is not very easy to give partly because there is not a great deal of uniformity and partly because in a short stay of three months it was not possible to go into this question very deeply. What surprised me in the State was the extent to which things were in the hands of private organisations. This applied not only to public health nursing but to many of the activities which are more usually the work of local bodies. My experience was practically confined to the Eastern States and I believe that in Central and Western America public control is more the rule, but in the East it is certainly not so. Not only are many of the biggest and most important hospitals private ones, but the work of public health nurses is carried on by what are called "Visiting Nurse Associations" and the nurses are the employees of these associations and not of public health departments of cities, countries or states. In some cases the field has been divided and the voluntary associations takes on a definite part of the work while the Municipality does another part. This was the case in New York City, for example. When I enquired from public health nurses whether they did not consider that their work was such as should be undertaken by public bodies, they agreed that it was so. But in actual practice they preferred the existing arrangement because in the States politics invades all spheres of life and the nurses feared that if they were under public bodies political consideration would come before efficiency and sound work.

As I remarked before, the Visiting Nurse Associations in the larger towns, at least, are very efficiently run. They employ large staffs, many members of which have special duties, such as supervision, teaching, etc. This is a feature from which, in India, I feel we have something to learn. With workers whose general level of education is much lower than in America, we yet leave these workers without supervision, without stimulus and without further education. While we cannot, of course, aspire to a state of affairs resembling that in America, I feel that under the present system the quality of work often falls far below what it should do because workers are left without adequate supervision. It is not a case of setting one person on to watch the work of another, it is the provision of an educated sympathetic senior to encourage, stimulate, counsel and befriend the less advanced workers.

The relation of public health nurses to the medical profession is a somewhat loose one. The help of the nurses is available to members of the profession who desire it and a good deal of effort is made to avoid encroaching on the sphere of doctors. There are not so many medical officers of health specialising in maternity and child-welfare as in England and clinics are held in hospitals more frequently than at welfare centres as is done in England and India. I was very impressed with the extent to which the outpatient departments of big hospitals were undertaking real preventive work. In this matter the public health nurses were co-operating with enthusiasm and the partership is bound to prove fruitful. This is another instance where we in India could take lessons from America since the vast majority of outpatient departments in India think in terms of numbers of patients and bottles of medicine rather than in terms of the health of human beings.

Before closing I would just like to mention one characteristic fact. America has realised in part at least that health has a cash value. As a result the big insurance companies are spending millions of dollars on supporting the work of public health nurses. Big business is not conducted on philanthropic lines and industrial welfare has been found to pay. Insurance companies find that it pays them to provide nursing care and to produce much health propaganda material for those who insure with them. Can we not apply this to India also, not necessarily in insurance companies, but the general lesson, that health is an economically valuable proposition?

# CASE NOTES

## A CASE OF OVERDOSE OF EPHEDRINE HYDROCHLOR

S. CHAUDHURI

*Madhupur*

Overdose of ephedrine hydrochlor is so rare that no antidote of the drug, which is now in common use, is mentioned in literature. The following case, therefore, seems worthy of record.

### Previous History

Mrs. X, aged about 35, suffering from a severe type of asthma, throughout the year for about 18 years. No treatment or change of climate could give her lasting relief. About 6 years back, she was, for the first time, given ½ grain Ephedrine Hydrochlor Tab. of B.D.H. & Co. This caused so great a discomfort about the heart, that the patient was alarmed and would not take the tablet again. As, however, temporary relief of the spasm of asthma followed and as the palpitation caused by ephedrine did not last long, after a few days, she was persuaded to take half (or ¼ gr.) of the tablet. This dose repeated after 2 hours (½ gr. in 24 hours) was tolerated. As the tablets gave some relief, they were continued till 2 to 4 tablets could be taken in 24 hours, whenever the fits of asthma were severe. Her pulse, normally, is rapid, varying from 115 to 120. About a year and a half ago she had a severe attack of broncho-pneumonia following quinsy which burst. Felton's serum, 70,000 units, was injected and there was gradual recovery, after which, the old fits of asthma disappeared for a time completely. The fits re-appeared again, but used to get controlled easily by a ½ gr. tablet of ephedrine. It is remarkable, that though a confirmed asthmatic there was no serum sensitiveness at the time of pneumonia.

### Present History

On the 4th March, 1935, at about 8 p.m. she took in one dose 28 tablets of ephedrine hydrochlor, ½ gr. each (B.D.H) to cure asthma for good. After 15 minutes, she experienced a peculiar tingling sensation all over the body, specially in the extremities, with giddiness that prevented her from sitting up. One hour after taking the tablets her extremeties became cold. After about two hours she vomited and had severe headache with unbearable bursting pain in the eyes and her respiration became rapid. She had a peculiar uncomfortable sensation in the region of the heart and felt as if the heart stopped with a ' thud ' every now and then.

She vomited five times during the night and several times during the next day. Her first two vomits consisted of partly digested meal she partook at about 2-30 p.m. Nausea was great and there was stranguary relieved by passage of copious urine at about 12 p.m. Mentally the patient was excited talking hysterically and with difficulty.

Striking feature of this case was that the pulse, which used to be normally 120 per minute, slowed down to 100 per minute and was full and regular.

For treatment, amyl nitrate was kept ready, but as symptoms subsided gradually no special treatment was necessary.

# THE HISTIDINE TREATMENT OF PEPTIC ULCER WITH A NOTE ON FIFTY-TWO CASES

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*London*

Adequate medical treatment of peptic ulcer, it is increasingly said, is usually satisfactory.

But if by adequate medical treatment is meant that counsel of perfection—a month in bed with careful dietetic, drug, and nursing control—it is obvious that it can only be obtained by the few.

In the writer's own hospital practice there is an average of ten per cent. of patients suffering from peptic ulcer, and in-patient treatment would necessitate one-third of the adult medical beds in the hospital.

" They would constitute a quarter of the total medical in-patients, and their stay in hospital would be 50 per cent. longer than the average duration of stay. Figures such as these require no elaboration, and they must be a fair sample of the experience of other centres."

It has been the author's practice during the last few years to use a simple dietetic and alkaline treatment which the patient was instructed to carry out at home, in-patient treatment being of necessity reserved for the failures and cases needing surgical treatment.

The imperfections of this arrangement are obvious, and it was, therefore, decided to resort to ambulatory treatment by means of histidine injections, as recently advocated by ARON and several other Continental authors. The histidine used was ' Larostidin ' brand histidine.

" Since February, 1934, a study has been made of histidine treatment in 52 cases of peptic ulcer, and there has been no selection except when distance made treatment impracticable. So far as possible histidine has been the sole treatment, and except in 3 cases (one treated in bed at home and two admitted to hospital for study) the treatment has been ambulatory; no instructions about diet have been given, and no medicines ordered. . . A number of the patients remained at work and special arrangements were made at the hospital to enable them to have injections during their leisure hours.

In all but one patient X-ray control was available; radiography was carried out before treatment, immediately after its termination, and at intervals afterwards. A recent follow-up has been successful in all but three cases which could not be traced, and most of the patients have been radiographed again before the assessment of the results as set out below.

Treatment consisted of the daily intramuscular injection for three weeks of 5 c.cm. of a 4 per cent. solution of histidine: local and general reactions were not met with, and in two cases 20 c.cm. were given daily for three weeks without demonstrable ill-effects.

In the accompanying Table the results are given under two headings: the " immediate results " are assessed as soon as treatment is finished, and the " later results " after the follow-up of all treated cases. Under a third heading are given those excluded from the " later results " because they are too recent—treatment having been completed within the last two months.

Table showing Immediate Results

( Total cases, 54. Treatment completed, 52. Under treatment, 2. )

Group A.—Symptom-free with normal radiogram ... 30 (d. u. 8, g. u. 22)
Duration of symptoms:
2 weeks to 8 years.
Average 2 years.

Group B.—Symptom-free with abnormal radiogram ... 10 (d. u. 3, g. u. 7)
Duration of symptoms:
2 weeks to 5 years.
Average 2 years.

Group C.—Failures ... 12 (d. u. 6, g. u. 6)
Duration of symptoms:
4 weeks to 9 years.
Average 4½ years.

Follow-up (total cases, 36).

| | | | |
|---|---|---|---|
| Group A.— | Still symptom free | 15; relapsed | 3; untraced 1 |
| Group B.— | | 7; ,, | 0; ,, 1 |

Group C.—Still failures 7; improved 1; ,, 1

Too recent (total cases, 16).

| | | | |
|---|---|---|---|
| Group A.— | Symptom free with | normal radiogram ... | 1 |
| Group B.— | | abnormal radiogram... | 11 |

Group C.—Failures . . . . . 4''

The immediate results of Larostidin treatment may be expressed in percentages as follows:

(*a*) 58 per cent. of symptomatic cures with disappearance of the abnormal X-ray findings;

(*b*) 19 per cent. of symptomatic cures with persistence of some radiological abnormality;

(*c*) 23 per cent. of failures.

" The results seem to be better than those of the more orthodox methods and quicker of achievement, whilst treatment on ambulatory lines has much to commend it."

( *Abstract from " The Lancet " Dec. 8th, 1934* )

# MENINGITIS

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We had the opportunity of treating about 300 cases of meningitis in the last 3 years. We have found that a very large number of cases die slowly from asthenia. The whole course of the disease in these cases spread over a period of 2 weeks to 3 months. In spite of our best effort it has not been possible to obstruct or resist this inevitable onward march to death. Under our instruction, Assistant Physician DR. S. C. CHAUDHURY performed a number of experiments with anti-meningococcus serum. The whole idea underlying this experiment was to find out the lytic value of the serum over the meningococcus bacteria. It was found that the serum alone produced very little lysis in the emulsion of meningococcus and a definite amount of the complement was necessary to bring about this phenomenon. Now, the whole question arose whether the meningitis cases failed to elaborate sufficient amount of complement in their body and thus were unable to improve. So another series of experiments were performed where the quality of the complement in these cases were measured, in terms of hæmolytic value. Rabbit amboceptor 1 in 300 and 0.5 c.c. of 20% emulsion of sheep's corpuscle were used. It was definitely established that as compared with the normal human complement none of these cases even approached half. Some of the cases were so low as 1/6 of the normal human complement. We, therefore, started giving anti-meningococcus serum injection along with equal quantity of whole blood intramuscularly. The results have been marvellous. Not a single case died since we started this new method. Altogether 6 cases have been cured. Out of the 6 cases, 2 had already begun to be asthenic and already shewn signs of absolute failure with large quantities of serum injections. They were more than 49 days old when this new treatment was started. Further study on these lines by our colleagues will be highly appreciated.

Our thanks are due to Lt.-Col. B. G. MALLYA, Surgeon-Superintendent, Howrah General Hospital, and Dr. B. C. ROY, Chief Physician, Carmichael Medical College Hospitals, for their permission to publish this note.

JOURNAL
OF
THE INDIAN MEDICAL ASSOCIATION

Vol. IV JULY No. 11

## THE PROBLEM OF NUTRITION

The problem of nutrition is obviously fundamental to all questions of health and disease. Since the time of Lavoisier, who made the epoch-making discovery about the nature of heat-production in the animal body, systematic studies on nutrition have been carried out in Western countries by LIEBIG, BUNGE, RUBNER, VOIT, BENEDICT and others. Their combined researches threw much light on the fuel-requirements of the body in relation to proteins, carbohydrates and fats, the inter-relationships between these major food-constituents and also on the requirements of the body for tissue-building.

The essential nature of minerals for nutrition has also been long recognised and the study of the problem at the present day has resulted in unexpected discoveries regarding the need of elements, such as copper and manganese.

The recognition that some organic substances, quite different from proteins, carbohydrates and fats, are essential in minute doses for normal nutrition and growth opened up a whole field of investigation about twenty years ago. To-day two of the vitamins—A and $B_2$ (or lactoflavin)—have been synthesised in the laboratory. Two others—vitamins B and D—have been isolated in the pure state and a third—vitamin A—has been obtained in a nearly, if not entirely, pure condition. New vitamins of unknown nature have been discovered by WILLIAMS, READER, COWARD, GUHA and others. Approximately three papers are being published on this subject every day throughout the world, which would indicate the intense activity in this field.

The results of these fast-moving researches are being slowly applied to the problems of human nutrition in Western countries. The interesting work of CORRY MANN on the nutritive value of milk for growing boys is being applied to many schools in Great Britain and beneficial results (estimated statistically) regarding the average height and stature have already been obtained. Clinical applications have also been made and vitamin therapy is making much headway, specially in America. While some startling claims have not been substantiated, the clinical results indicate that in a near future new discoveries of clinical importance will be made.

In India, however, lack of adequate knowledge regarding the nutritive values of the varied Indian food-stuffs with respect to proteins, minerals and vitamins has partially inhibited advance. In this connection we should like to direct attention to an article by DR. B. C. GUHA appearing elsewhere in this issue. We heartily endorse the suggestion that a co-ordinated nutritional survey of Indian food-stuffs and dietaries should be taken up by an expert All-India Committee without delay. Dietetic problems in India vary from province to province. Traditions and habits differ. Racial and climatic considerations have to be taken into account. The problem is, indeed, vast and would seem to demand the creation of a Central Institute for Nutrition.

The investigations carried out by Dr. GUHA and his co-workers on a fair number of food-stuffs already indicate great possibilities. Some Indian fruits, for instance, the guava, mango, lichi, shaddock, have been found to excel the well-known anti-scorbutics, the orange and lemon, in vitamin C. Some Indian fish liver oils excel codliver oil in vitamin A.

The investigation of a Bengali dietary reveals varied deficiencies, as was first pointed out by SIR R. MCCARRISON. The construction of model dietaries for different physiological conditions that is to say, for growing children and for pregnant and nursing women,

can be constructed only when sufficient data are available regarding the nutritive values of the numerous Indian food-stuffs. The diet of the pregnant and lactating women calls for immediate attention. There are reasons to believe, as Dr. Guha points out, that their diet does not provide an adequate supply of calcium, iron and some vitamins. The question of cost is highly important in this poor country, but, we believe, it is possible to construct dietaries suitable to the poorest classes of our people, if only the requisite scientific information about our food-stuffs is available.

It is encouraging to note that nutritional work has now been taken up in different laboratories in India. But, as we have pointed out, there should be greater co-ordination of work in this field, seeming that the country is so vast that the dietary problems must necessarily have local variation. Increasing attention is being paid to the question of nutrition all over the world and it is being found that all is not well with established habits. India's nutritional problems can obviously be tackled only in Indian laboratories and such nutritional work should receive all help to make it grow in volume and intensity. There can be no doubt that the improvement of the standard of nutrition of the Indian people will be followed by a heightening of the standard of general health and efficiency.

# MODERN THERAPY IN GENERAL PRACTICE

## DIFFICULTIES IN THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS

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We are dealing with a disease which usually lasts for several or many years from its onset to its end; very chronic at first, progressing irregularly, with long quiescent intervals and in a considerable proportion of cases causing little or no disturbance of health or interruption of working capacity until it reaches the stage of being beyond repair, a condition that has little better prognosis than cases of malignant disease. We are driven to recognise that the present machinery for diagnosing this disease is impotent to prevent this tragedy, and our purpose is now to consider if there are any altenrative means available.

Very probably the patient must bear a large share of the responsibility himself for continuing at work, ignoring such danger signals as there were, unwilling or sometimes afraid to seek medical help until it was too late. But can we blame him much, seeing that the danger signals are so slight and apparently trivial in many cases? The combination of mildness of symptoms and delay in consulting a doctor about them is by far the main factor in preventing early diagnosis. Making all allowanes for this there remains a residuum of at least 10 per cent. of the cases coming to a sanatorium where the responsibility must rest on the doctor for failing to recognise the disease in its early curable stage. To understand the causes of these failures it is necessary to consider shortly the evolution of pulmonary tuberculosis.

The primary stage, or primary infection, occurs mostly in infancy or childhood. It bears little or no resemblance to the pulmonary tuberculosis of adult life, is practically symptomless and is seldom recognised. So far as the general practitioner is concerned, its occurrence is more a matter of scientific than of practical importance since nearly everybody undergoes this infection. In only a small proportion of the population, possibly about 10 per cent. does the disease show any further stage, and this usually in adolescence or early adult life and mostly under conditions of bad hygiene or gross infection. Whether this stage is an efflorescene of the first after an interval of many years or is due to a re-infection from without in a body that has been materially altered in its immunity reactions by the primary infection is for our purpose of little importance. What is important is that this is the stage where identification is vital.

During the last two years radiology has shed new light on the evolution of this stage of pulmonary tuberculosis. The lesion appears first as a single or multiple focus varying in size from that of a few peas to that of an apple, most commonly under the clavicle or near the upper axilla, and consists not only of the real tubercles, but around them a broncho-pneumonic exudate, cellular and serous in character. This condition may develop in a few weeks or even a few days, usually with a short sharp pyrexia, but no symptoms suggesting its real nature, except perhaps a little cough. If the lesion is fairly large and the doctor detects physical signs, he may mistake it for pneumonia. But if it is small and deeply placed behind thick pectoral or scapular muscles physical signs may be impossible to make out. The sharp fever disappears in a few days, the condition is diagnosed as a " chill " or " influenza," and the patient is allowed to go back to work. The infiltration may disappear in the course of several months leaving practically no trace in subsequent X-ray films. More commonly the lesion persists and goes on to form a small cavity, while slight pyrexia and a little cough, with or without sputum, may be the only symptoms. This is the early stage from which slowly develops, often over a period of years, the chronic fibroid or fibro-caseous phthisis which it is our aim to avoid.

Now you see the problem which confronts the general practitioner. He is the only person who can catch the disease in the early stage of infiltration and yet he has nothing to go on except a little fever, which requires careful trained observation to detect, and perhaps a little cough, possibly some chest aching if the lesion is superficial. He would be lucky

to find physical signs. There may be a little sputum, but as often as not there is none or the patient may not be aware that he is swallowing such shreds of sputum as there are. Tubercle bacilli are seldom found in the very early stage, but they may be, and should be looked for.

In a sanatorium one learns how fallacious physical examination of the chest may be. Many cases are sent in as early cases and as having hardly any physical sign of chest disease who have three or four or five lobes affected. A considerable proportion of patients entering a sanatorium show no moist sounds or other adventitious sounds. Further, such physical signs as may be detected do not necessarily tell whether the disease is active or puiescent. It is partly because medical practitioners in the past have relied on physical examination, the standards of which are based on advanced or semi-advanced cases, that they have failed in diagnosing pulmonary tuberculosis in the early stage. A doctor has no justification for telling a patient that he is not suffering from phthisis simply because the typical physical signs cannot be detected.

The patient's symptoms may be equally unreliable. There may be nothing more than lassitude, or gastro-intestinal disturbances or a little cough. Unless it is looked for carefully there may be no evident fever. But many other ailments may produce these same symptoms.

Bacteriological examination also fails to help in many cases. There may be no sputum. If there is, the finding of tubercle bacilli of course settles the diagnosis, but generally it settles also that the case is no longer an early or incipient one. If the test is negative, it should be repeated again and again. Even if it is persistently negative, we have no right to say that tuberculosis is not present.

Thus in searching for the really early case, the three methods of examination on which we have hitherto relied have failed us. Nor do I see any hope that better results are attainable from efforts to improve the training of the coming generation of medical men in physical examination. They seldom see the cases in general hospitals and there is no present evidence that a training in tuberculosis work is likely to be included in the already overfull curriculum. In other words, the old standards will not diagnose early tubercle. We must look to others.

Information can be got from two sources which, in my opinion, will be much more helpful in diagnosing early lung tuberculosis, namely, the history of the case and and X-ray examination of the chest. Careful questioning of the patient about his family history, his previous illnesses, the commencement and the progression of the symptoms of his present illness, will help very greatly in estimating the probabilities before any other examination is undertaken. It is a question of eliciting not merely certain facts but also their sequence and accompanying circumstances. It is true that such information is more significant to the expert, but certain facts are important guides to the general practitioner. A history of pleurisy even some years earlier or of blood spitting should be taken as a presumption that the subject is tuberculous. A cough lasting for more than a few weeks without other explanation, chronic bronchitis in a young man or woman, a history of influenza, especially if repeated, at times when there is no epidemic of influenza or no contact with a case of influenza in the family or the workshop or office, are all very suggestive of pulmonary tuberculosis.

A diagnosis of influenza alone, or less frequently influenza with pneumonia and pleurisy, is one of the commonest mistakes made in early tuberculosis. Pneumonia and pleurisy are also diagnosed when the real condition is a tuberculous pleurisy with a small or a moderate effusion which, in a patient confined to bed, causes either by itself or by subsequent thickening of the pleura, dulness corresponding very closely to the area of a lower lobe. Unless associated with an acute lobar pneumonia, a pleurisy with or without effusion ought to be regarded as almost always tuberculous and part and parcel of phthisis. Pleurisy is often present without friction and without the typical stabbing pain. A chest ache may be the only evidence of its presence. I have learned to be very sceptical of a diagnosis of " pleurodynia " or of " muscular rheumatism " of the chest.

Similarly spitting of a tea-spoonful or more of blood should be treated as almost certain evidence of lung tuberculosis. Many a patient's life has been lost because his doctor, failing to find physical signs in the chest, has assumed that the blood came from the throat. For practical purposes there is no such thing as a spontaneous hæmorrhage from the throat.

Quite a large number of cases of pulmonary tuberculosis in the early and middle stages are treated month after month for chronic bronchitis when the latter is really only an associated condition. In a series of sanatorium patients I investigated as many as 39 per cent. gave a history of winter cough or

chronic bronchitis for two or three or more years. I doubt if anybody now believes that the tuberculosis was grafted on a pre-existing bronchitis. Chronic bronchitis in a young or middle-aged man or woman should not be accepted as an entity in itsef, but an explanation should be sought, tuberculosis being the commonest.

Cough is the one symptom that is nearly always present in active tuberculosis. The patient himself may deny having any cough or sputum, but under close questioning may admit having a smoker's cough in the morning or he may in the presence of the doctor clear his throat several times and possibly swallow several pieces of sputum. Out of apparently trivial clues pieced together like a jig-saw puzzle, the medical man may have a very strong suspicion of the nature of the illness. But he and his patient want reasonable proof, and this can, in the circumstances, only be obtained by radiological examination.

Chest radiography has made rapid strides in the past ten years. Apparatus and technique have been so much improved that X-ray examination has displaced physical examination as the most important mode of investigating the condition of the lungs. Each method should be used to supplement the information given by the other.

The late DR. STANLEY MELVILLE, out of a long experience at the Brompton Hospital, summed up the position as follows:—

1. Definite infiltration of the lung can quite readily be demonstrated on an X-ray film as soon as there is any definite clinical evidence.
2. When physical signs are present, it may be assumed that the initial stage has passed, and in these cases the X-ray film will usually reveal far more extensive involvement of the lung than is either suspected or can be revealed by the physical examination.
3. If we were dealing only with physical signs *versus* the X-ray film, the latter would be the safer guide.

When there is any reasonable doubt about the existence of chest tuberculosis—and the issues being so serious, no reasonable doubt should be allowed to persist—an X-ray examination should be made. In the case of a fractured bone, X-ray examination is now a matter of routine and is necessary to protect a doctor from a charge of malpraxis. It will not, I believe, be long before the same rule applies to the much more serious matter of the diagnosis of early lung tuberculosis, and a doctor will be held morally, if not indeed legally, responsible for failure to arrange for a radiological examination.

One point about X-ray examination is that it must be properly carried out. In even good general hospitals, where the bulk of the radiology deals with bones, joints, and opaque meals, chest photographs are frequently over-exposed and so give unreliable information. Further, the interpretation of X-ray films requires a good deal of experience, which should, however, be within the capacity of every reasonably well qualified tuberculosis officer.

I have tried to show that though it is easy to diagnose pulmonary tuberculosis in its advanced stages, it is very difficult in the really early stages, so difficult that the medical profession has consistently failed to do so by the earlier methods of physical examination. If we honestly admit this failure, there is no alternative but to make the fullest use of the new instruments at our disposal. While radiology is not by any means infallible in the early diagnosis of pulmonary tuberculosis, it affords such vast help that, where there is any reasonable doubt whatever, it ought to be called in. Along with it should go a careful probing into the history and of course bacteriological examination of the sputum on the chance that tubercle bacilli may be present in it. A long way behind comes the physical examination of the chest.

These facts are not sufficiently known among the medical profession. Tuberculosis officers and medical officers of health could do a great deal more than is done now to encourage general practitioners to send up for X-ray examination patients with a persisting cough, chronic bronchitis, recurring influenza, coughing up of even a minimal amount of blood and anything suggesting pleurisy. It will, of course, be asked how the cost is to be met. Local authorities have a duty to provide tuberculosis dispensaries for the diagnosis and control of tuberculosis, and to provide the staff and equipment necessary for the purpose. Dispensaries not so equipped are more numerous than might be thought and waste a great deal of public money. One of the main functions of the dispensary is diagnosis, and this cannot be fulfilled unless there are available observation beds, a proper X-ray installation and a medical officer with real experience in tuberculosis and in the interpretation of chest films.

All this, however, applies only to patients who for one reason or another come within reach of their doctors or are sought out as contacts of known cases of tuberculosis.

Systematic periodic surveys of the whole population would, of course, detect many cases of tuberculosis in an early stage as well as the early stages of other diseases. But such a proposition is impracticable for the present, although in the not far distant future it may be one of the foundations of preventive medicine.

Nevertheless, such surveys can be done and are being done on limited groups of population. For the most part this is done first by tuberculin skin tests and then investigating the positive reactors by X-ray examination and physical examination. For example, DIEHL (quoted by MIERS, Am. Rev. Tub., Feb., 1933, p. 123) investigated 2,500 students entering certain American universities. Approximately 800 reacted and were X-rayed. Of these 15 showed adult forms of pulmonary tuberculosis while there were in addition many cases of pleurisy and childhood type of tuberculosis. More than half a dozen great American universities instituted similar tuberculosis finding procedures in 1931. Similar surveys are also being made in colleges and high schools in the United States and one at least of the great American insurance companies arranges for an annual examination of all its office staff with a view to detecting early tuberculosis. The primary examination is by fluoroscopic X-ray screen. If anything suspicious is detected an X-ray film is taken and a physical examination made. HETHERINGTON and FLAHIFF (Am. Rev. Tub., Jan., 1933, p. 71) have pointed out that fluoroscopic examination has limitations and may miss small lesions which show up clearly on a film. OPIE and his coworkers (Arch. Int. Med., Nov., 1931) drew attention to the increasing frequency of grave tuberculous lung infections according to the year of age in adolescent and young adult students, for example one only in 452 medical students during their first two years of study, four in the third year, and nine in the fourth year.

In this country tuberculous infection appears to be more widespread among the population than in America where the percentage of positive reactions varies in different areas from 20 to 90 or more. Hence tuberculin tests would have less value in this country in the search for early cases of lung disease.

The example of the American schools and universities and insurance corporations might with advantage be followed in this country. The cost of taking an X-ray film of a chest is not far short of 10 s. but, if facilities were provided, many young men entering professions or their parents would be glad to pay such sum annually if it were to do anything to give them early warning of an impending breakdown from tuberculosis. Public authorities would, I feel sure, do better to submit contact cases as a routine to X-ray examination rather than depend on physical examination alone. Whatever further steps are felt to be justified in order to save lives threatened by pulmonary tuberculosis, one must keep steadily in mind that the present methods have proved themselves inadequate.*

*(Abstract from an address delivered before the Royal Institute of Public Health; reproduced from the *Medical World*, 42: 9, 285-288.)

# CURRENT MEDICAL LITERATURE

## MEDICINE

### The Treatment of Intestinal Amœbiasis

GIORDANO, M. records (*Arch. Ital. Sci. Med*, 15:9, 1934) 30 cases of amœbic dysentery, that is, all were passing blood and mucus and in most of them the entamœba was seen. Thirteen had previously been treated by emetine (some had had more than one course), stovarsol, or yatren without cure. They were then given Vioform (Iodo-oxyquinoline hydrochloride) Ciba, by mouth in doses of 0.75 gm. daily for 10 days, the course being repeated after an interval of 5-7 days. In no instance were any toxic symptoms produced, and the entamœbæ disappeared. In two patients they were found again later, but both of these lived in unhygienic surroundings with every chance of reinfection.

### Blackwater Fever Following Atebrin

Records are given by MOIR. K. TOLE (*West. Afr. Med. J.* 7:3, 1934) of two cases of black-water fever following the administration of atebrin. The author considers the matter is of importance and should be generally known, the more especially because the manufacturers state that atebrin is " not contra-indicated in black-water fever."

Case I. Veterinary officer, aged 31, took ill with fever on 23-9-33. On Sept. 26th *P. falciparum* infection was diagnosed and a course of atebrin and plasmoquin simplex (3 tablets a day for 3 days) recommended. The patient had been in the habit of taking prophylactic quinine, 5 gr. daily, but discontinued this whilst taking atebrin. He suffered from marked abdominal symptoms and vomited. The next day he still felt bilious, so did not take the last of the atebrin plasmoquin tablets. On October 3rd he felt well all day and played polo in the evening. Later, however, his temperature rose to 100°F. On October 4th, as he was still feverish, he took 5 gr, of quinine at about 8 a.m.; at 9-15 p.m. he had a rigor and passed black water later in the evening. The attack was a mild one.

Case II. Veterinary officer, aged 26. This officer was sent to relieve the previous one when he fell ill. He also was in the habit of taking the daily prophylactic dose of quinine. He contracted subtertian malaria and was given the same course of atebrin and plasmoquin simplex as was the previous case, but, on the recommendation of his doctor, he continued his daily dose of 5 gr. of quinine whilst taking the atebrin. He completed the course of treatment on November 3rd. The next morning he took his customary 5 gr. of quinine and felt well during the day, but in the evening had some malaise. He went to bed early and had a severe rigor at about 10 p.m. and took 10 gr. quinine and 10 gr. of aspirin. About midnight he passed black water; this attack was also mild.

Discussing these cases, the author writes that it is obvious that the course of atebrin plasmoquine failed in two respects, *viz.*:—

" 1. It did not prevent the onset of blackwater fever.

" 2. If one agrees with the hypothesis that blackwater fever is always a complication of malaria then a full course of atebrin with plasmoquin cannot have got rid of the malarial infection in these cases. This is borne out by the presence of parasites in the blood of case II.

3. " The questions suggested by these cases are as follows:—

" 1. Are they examples of failure of the specific action of atebrin, the drug being in good condition, or was the failure due to some other cause?

" 2 Were the attacks of blackwater fever directly excited by the atebrin-plasmoquin taken?"

It is difficult to answer the first question. There seems to be no evidence that the drug had undergone any deterioration, or that the patients had failed to take the course of treatment conscientiously and regularly. As regards the question whether the blackwater fever was directly excited by the atebrin-plasmoquin course, the author states that this can best be answered by considering first what other exciting cause there may have been. It might be argued that the resumption of the daily prophylactic quinine in Case 1 was the exciting factor, but such a conclusion is completely negatived by Case 2, in which the daily quinine was taken throughout the atebrin course.

After considering all the circumstances, Moir writes "The fundamental conclusion remains that under certain circumstances, which cannot be defined, atebrin-plasmoquine is not only incapable of preventing blackwater fever, but will probably excite an attack." This conclusion, in Moir's opinion, is of the greatest importance and discredits the claim that atebrin is not contra-indicated in blackwater fever. He does not mean that atebrin is not a valuable drug in the treatment of malaria, but that it cannot be regarded as safe, and must be placed in the same category as quinine, and "given with the same degree of caution in subtertian malaria when a possibility of blackwater fever exists."

### Rapid Immunization Against Diphtheria

A. E. Keller and W. S. Leathers (*Journ. Amer. Med. Assoc.* August 18th, 1934) record the results obtained from prophylactic injection of a single dose of 1 c.cm. of alum-precipitated diphtheric toxoid. In one group of twenty-three Schick-positive children 60 per cent. became negative in fourteen days, 95.6 per cent. in twenty-eight days, and 100 per cent. in forty-two days after injection. In another group of fifty-three children 92.4 per cent. became negative twenty-two days after one injection,94.3 per cent. in sixty days, and 96.2 per cent. in ninety days. The results following immunization with a single dose of alum-precipitated diphtheric toxoid thus compared favourably with those obtained from two doses of toxoid without alum or toxoid with alum, and were much better than those reported following one dose of toxoid without alum or with alum, or three injections of standard toxin or anti-toxin mixture.

### Strophanthin in Angina Pectoris

E. Edens (*Münch. med. Woch.*, September 14th, 1934, p. 1424) believes that angina pectoris is most commonly due to anæmia of the heart following increased irritability and spasm of the coronary blood vessels. He suggests that the irritability rather than the spasms of the blood vessels should be treated. He has given strophanthin in ninety out of 230 cases with excellent results—0.3 mg. strophanthin is given daily (in severe cases twice daily) for three days with an interval of one day. The atttacks become less frequent and painful, and stopped altogether in a short time. Intravenous injection is better than intramuscular or oral administration. In certain cases the administration of strophanthin may help to differentiate between angina pectoris due to cardiac anæmia and that due to vasomotor disturbances. In the latter strophanthin is of little value, and anti-spasmodics may be used or the actual irritants—excitement, movement, nicotine, and "organic reflexes."

### Acute Pulmonary Congestion and Cardiac Asthma in Mitral Stenosis

S. McGinn and P. D. White (*Amer. Heart Journ.*, August, 1934, p. 697) report (1) ten cases of uncomplicated mitral stenosis, and (2) ten cases of mitral stenosis complicated by aortic valve disease or high blood pressure, in all of which attacks of acute pulmonary congestion with dyspnœa or definite wheezing were observed. The average age of the two groups was 31.3 and 50 years respectively. Eight of the ten patients in Group 2 died within an average of two years after their first attack, and four of the first group in an average of three and a half years. In seventeen of the twenty cases exertion was the factor precipitating the attacks in contrast to the results in a large series of cardiac asthma cases without mitral stenosis in which exertion appeared to excite attacks in only 8 per cent. In five individuals with mitral stenosis only attacks were precipitated by paroxysmal tachycardia. Six of the total twenty patients had auricular fibrillation. The attack of pulmonary congestion was fatal in two cases of uncomplicated mitral stenosis; post-mortem examination in three cases of this group showed no hypertrophy of the left ventricle. The author's view of the mechanism of the attacks is that when the heart rate is increased by effort, excitement, or paroxysmal tachycardia, the hypertrophied right ventricle of these hearts with mitral stenosis (but without heart failure) expels more blood than can pass through the mitral valve in a given time, resulting in pulmonary congestion, œdema of the lung, hæmoptysis, and even death.

### Conjugal Tuberculosis

I. Natin, C. da Rin, and M. L. Gutierrez (*Semana Médica*, September 20th, 1934, p. 898), having analysed the cases treated in the Jose Penna Hospital (Buenos Aires) conclude that the morbidity from tuberculosis (11.7 per cent.) among spouses of tuberculous partners is three to four times that of the remainder of the population, and is approximately that of the brothers and sisters of tuberculous subjects (12.5 per cent.), much higher than that of parents (1.7 per cent.) and lower than that of children (23.4 per

cent.). These figures refer to subjects more than 20 years of age. Conjugal tuberculosis is commoner when no prophylaxis has been undertaken. The percentage among surviving partners who suffer from tuberculosis is high. From those who were tuberculous it is evident that tuberculosis was more frequently the cause of their bereavement in a percentage much greater than the tuberculous death rate of the entire population. (Buenos Aires with a population of 2,200,000 has a tuberculous death rate of 1.6 per 1,000, which is equal to 15 per cent. of the general death rate.) Given similar risks of exposure to both partners, it is the female who is the more frequently infected.

### Auto-Urotherapy

M. KREES (*Monatschr. Kinderh.* 60:496, 1934) shows that it is possible to influence favourably allergic and spastic conditions with the intramuscular injection of a child's own urine. He observed prompt improvement in children with hay fever and with asthma. He usually injected 0.5 cc. of the urine. The injections were repeated at intervals of from two to twelve days. The favourable results obtained in hay fever and asthma induced the author to try the treatment in spastic conditions of an entirely different type; namely, in those that were probably caused by obstetric injuries. Here too, improvement was noted, but the author admits that this improvement is not a complete cure. Nevertheless, he thinks that auto-urotherapy deserves a trial in pediatrics, particularly in children with hay fever or asthma. The effective substance of urotherapy is still unknown; its efficacy is due neither to nonspecific protein bodies nor to antigen action.

### Prognosis in Hyperpiesis

J. BRANA and G. SCHIFF (*Wien. med. Woch.*, September 15th, 1934, p. 1013) point out that both the medical profession and the general public are at present inclined to attach much importance to the prognostic evidence of blood-pressure readings. But the authors' investigations during the last seven years have made them sceptical in this matter, and they have come to the conclusion that essential hypertonia is a condition which may have lasted for many years before it gives rise to symptoms, and it may often be completely banished by changes in the patient's mode of life. The observations made by the authors in this connexion do not, however, apply to cases of syphilis or albuminuria. A comparison of blood-pressure readings with ophthalmoscopic readings often showed a striking lack of conformity, quite high blood pressures being frequently associated with a normal ophthalmoscopic picture, or, on the other hand, only a slight rise of the blood pressure with signs of advanced sclerosis of the retina. Positive ophthalmoscopic findings were invariably accompanied by headache and giddiness, which were comparatively rare and slight when the ophthalmoscopic picture was normal. The authors refer to three patients whose blood pressure was between 140 and 170 mm., and who complained of severe headache, giddiness, and tinnitus. The ophthalmoscope showed œdema, narrowing of the blood vessels, and hæmorrhages. All the three patients died within the next two years, although their blood pressure had not been alarmingly high. In two other cases, on the other hand, the blood pressure was 200 and 220 to 300 mm. respectively, whereas the ophthalmoscopic picture was normal. Six years later there was no subjective or objective change for the worse in either case. The authors classify their ophthalmoscopic findings in three groups according to the severity of the sclerosis observed, and they have found that of the patients belonging to the third group half were dead within two years and the remainder had been overtaken within the same period by hemiplegia or some similar ailment.

### Prognosis in Gastric and Duodenal Hæmorrhage

T. CHRISTIANSEN (*Hospitalstidende*, September 18th, 1934, p. 1023) has analysed the fates of 289 patients treated for massive gastric or duodenal hæmorrhage in a hospital in Copenhagen in the ten-year period 1923-32. No patient was included in this study whose hæmorrhage might conceivably have been due to some other cause, such as cancer. The treatment was rigid dieting for the first two or three days, with morphine. Increasing quantities of gruel and milk were then given, and were followed by a gradual return of an egg, porridge, potato, fish, bread, and maigarine diet. Blood transfusion was undertaken in only fourteen cases. As many as 211 of the 289 patients had had one or more attacks. Twenty-three had no previous hæmorrhages. The remaining (7.9 per cent.) patients died. The mortality was higher among the women than the men (10.3 and 7.1 per cent. respectively), and higher among the single than among the multiple bleeders (8.9 and 5.9 per cent.

respectively). It would, therefore, seem that the more chronic character of the disease in multiple bleeders favours recovery. Of the 203 single bleeders, 101 were under the age of 40: the remainder were over this age. There were four deaths among the former and fifteen among the latter. The same sinister influence of age on the mortality was also observed among the multiple bleeders, the mortality among whom was 4 per cent. under the age of 40 and 8 per cent. over this age. The prognosis was much better for the patients whose hæmorrhage was the first and only sign of ulceration than for those who had had other signs. But there was no demonstrable difference in the mortality of the patients with a short history and of those with a long history of symptoms. In the first five years, the mortality was only 5.8 per cent., while in the last five years, it was 10.1 per cent.—a change for worse which has also been observed in England in spite of the growing popularity of blood transfusion.

### Organo-therapy of Peptic Ulcer

This is based, according to K. GLÆSSNER (*Wein. klin. Woch.*, April 27th, 1934, p. 513 *Ref.*, *B.M.J.* July 7, 1934), on the findings that peptic ulcer does not affect regions of mucosa in which parietal cells are present (the exceptions are in cases of aberrant inclusions, in such regions, of other gland types); that more severe subcutaneous ulcers are induced with, than from those without, peptic ulcers; and that parenteral injections of neutral water-soluble pepsin from gastric mucosa accelerate the healing of such experimental subcutaneous ulcers. The organo-therapeutic treatment which Glæssner recommends consists in injection, subcutaneous or preferably intra-muscular, of extracts of gastric mucosa rendered sterile by filtration; small amounts of preservative and anæsthetic substances may be added. Two subsequent courses of injections at six months' intervals prevent recurrences. At the same time frequent mixed meals, from which red meat and extractives are excluded, are given, and the treatment is ambulant. Each meal is preceded by exhibition of 20 grams of pure olive oil and followed by a protective dose of a bismuth salt. Atropine medication is usually, and the alkaline carbonates are invariably, forbidden. The principal contra-indications are penetrating old-standing ulcers, marked stenoses, and acute hæmorrhage. The cases treated on these lines and adequately investigated by means which included X-ray and biochemical tests number about 1,000 of which some two-thirds were duodenal ulcers. Lasting cure was obtained in more than two-thirds. Recurrences were noted in 10 to 20 per cent.; unresponsive cases were often found to have morbid conditions of the bile passages or pancreas, or a malignant neoplasm—any of which might or might not co-exist with peptic ulceration. Injections of which the pepsin had been destroyed by heating to over 60°C. were inactive. LŒPER and his co-workers have had equally good clinical results from injection of 10 per cent. pepsin solution, the action of which they regard as one of desensitization: Glæssner visualizes, but does not decide amongst, three possible modes of action of his neutral pepsin namely, (1) its production of protective antibodies, (2) production of an increased hormonal antipepsin titre in the blood, and (3) stimulation and replacement of gastrogenic hormones promoting repair.

### Intravenous Serum Therapy in Gonococcal Arthritis

L. MATEOS (*Rev. Med. de Barcelona*, March, 1934, p. 272. *Ref. B.M.J., June* 16, 1934) declares that this is the treatment of election on account of its speedy action and efficacy. It is not followed by early "serum accidents," and its curative effects are constant. None the less he notes that the later complications of serum injection often follow, even though they disappear quickly when treated by calcium chloride, magnesium hyposulphate, and adrenaline. The biological and morphological affinity of the meningococcus and gonococcus induced HERESCO and CEALIC to employ antimeningococcal serum in four cases of gonococcal arthritis with results so successful that COLE and WEAVER followed their example, but employed it intravenously. MATEOS treated ten cases with antigonococcal serum, and his results have convinced him of its excellence. The method which he used is as follows. Antigonococcal serum (20 c.cm. in. 200 c.cm. of slightly hypertonic saline—9 per 1,000) is slowly injected into a vein of the fasting patient. Forty-eight hours later 30 c.cm. in 300 c.cm. of saline is similarly given, and followed at like intervals with 40 c.cm. of serum in 400 c.cm. saline, and finally, 50 c.cm. serum in 500 c.cm. of saline. By the time that the last injection has been given all pain and exudation will have disappeared, and a little massage and diathermy will complete the cure.

### Endocrine Therapy in Arthritis

In the course of research on the cerebro-spinal fluid, F. NEGRO (*Med. Welt.* April 7th, 1934, p. 480. *Ref. B.M.J.* June 16, 1934) found a striking improvement in a case of primary ankylotic polyarthritis on administering parenterally great doses of cerebro-spinal fluid from the horse. Convinced that this result was due to the hormone content (particularly the posterior pituitary) of the cerebro-spinal fluid, the author treated twenty-six cases of ankylotic polyarthritis with posterior pituitary extract in large doses. Seven of these cases are described in detail. Five showed marked improvement, while two were complete failures. Of the remaining nineteen cases, eighteen were successful and only one failed to improve. NEGRO concludes that certain diseases of the joints are probably due to an insufficiency of the pituitary gland, and that certain cases of chronic primary ankylotic polyarthritis may be favourably influenced by the administration of posterior pituitary hormones.

### Treatment of Pulmonary Tuberculosis in Diabetics

According to M. LABBE, R. BOULIN, JUSTIN-BESANCON, and J. E. THIERY (*Bull. et Mem. Soc. Méd. des. Hop de Paris*, February 9th, 1934, p. 204. *Ref. B.M.J.* June 16, 1934) artificial pneumothorax, completed if necessary by phrenic avulsion and combined with insulin therapy, is the only hopeful line of treatment in diabetics having pulmonary tuberculosis. Unfortunately, effective collapse is difficult to induce in these patients, whose lesions are apt to be diffuse, bilateral, and rapidly progressive, and in whom inflammation is particularly liable (46 per cent.) to be followed by effusion. Young subjects, in spite of wasting, respond better than the aged, and men better than women. Of a series of twenty-six cases, ten survived, two having a pneumothorax of some two years' duration, and seven having had effusions followed by adhesion (two to five years). The sixteen lethal cases included four in which artificial pneumothorax could not be induced on the contralateral side because of adhesions, one of speedy pleuro-pulmonary perforation, and one in which a serofibrinous exudate became purulent: nevertheless the time of survival reached in some cases two to four years, and was considerably greater on the average than that of diabetes otherwise treated—namely, two to eighteen months.

## PATHOLOGY AND BACTERIOLOGY

### Invariable Association of Gastric Achylia with Pernicious Anæmia

E. MEULENGRACHT (*Nord. Med. Tidsskrift*, July 14th, 1934) discusses the various signs indicative of pernicious anæmia, devoting special attention to gastric achylia. Its demonstration is a most important link in the diagnostic chain; in the absence of helminthiasis, it is unwarrantable to diagnose pernicious anæmia when there is no gastric achylia. It is true that, apart from the combination of helminthiasis with pernicious anæmia without gastric achylia, cases have from time to time been recorded in which this condition was absent and yet pernicious anæmia was diagnosed. But in his experiments of hundreds of cases of pernicious anæmia, the author has not once failed to find gastric achylia, and he suggests that if the records of the alleged exceptions to this rule be scrutinized, certain clinical and hæmatological lacunæ will be found which raise justifiable doubts as to the validity of the diagnosis of pernicious anæmia. It is significant in this connection that since liver and stomach treatment was introduced, and its specific action on genuine pernicious anæmia has become of diagnostic importance, the reports of cases of this disease, unassociated with gastric achylia, have begun to dwindle in numbers. It is probable that in most of these alleged cases of pernicious anæmia, without gastric achylia, the real condition was an aleukæmic leucosis, or an aplastic anæmia in which the erythrocytes present a megalocytic character reminiscent of that of genuine pernicious anæmia. It is not only often diagnosed wrongly; it is also often overlooked, even when the anæmia is profound, and about half of all the cases of pernicious anæmia admitted to the author's hospital in Copenhagen had been sent there with some other diagnosis.

### The Ætiology of Mongolism

A. J. ROSANOFF and L. M. HANDY (*Amer. Journ. Dis. Child.*, October, 1934, p. 764) report five new cases of mongolism in twins and summarize all hitherto published cases. The authors narrow down the ætiological factors of this condition to those that must be at work in the germinal or early embryonic period of environment. They adduce definite statistical correlation between the incidence of mongolism and the age of the parents, and argue that the real

ætiological factor is the age of the mother, that of the father having only an indirect bearing. Similarly, they maintain, the size of the family, the order of birth, and uterine exhaustion play no part in the ætiology of mongolism; these stand out in the statistics only by reason of their correlation with the one real factor—the age of the mother. Monogolism is more common among boys than among girls, suggesting that, although injury to the ovum is the essential cause of mongolism, the spermatozoon is not without its influence. The X-chromosome in the female-producing spermatozoon seems to have, at any rate in some cases, the power of protecting an injured ovum against its tendency to develop into a mongolian child. In this connection it is remarked that mongolism varies greatly in the severity of its manifestations, and is on the whole milder in girls than in boys, possibly owing to partial protection by the additional X-chromosome. The authors add that all the known facts concerning mongolism seem to point to some condition of the ovary as underlying its pathogenesis. Coarse or diffuse lesions would appear to be excluded. Possibly foci of tissue change, such as scars marking the sites of old ovaluations, are the causes of the trouble.

### The Retention of Endamœba Histolytica Cysts Under Finger Nails

Andrews' J. contribution (*Am. J. Trop. Med.* 14:5, 1934) is relevant to the question as to the part played by food handlers in the transmission of amœbiasis.

Spector and Buky's (1934) experiments led them to state that in spite of conditions which "provided for a fouling of the hands far in excess of that which would be likely to occur under ordinary conditions, even with the most untidy or wilfully careless carrier . . . the number of cysts of *Endamœba histolytica* to survive beyond five minutes was very small in proportion to those killed, and it was exceptional that any survived beyond ten minutes." The criterion of viability was alteration of cell wall permeability to a 1:1,000 aqueous solution of eosin. Spector and Buky's work was thus a demonstration of the unlikeliness of fæcal contamination of fingers of food handlers playing any part in transmitting amœbiasis.

Dr. Andrews devised and carried out experiments, here reported, to determine viability of amœbæ lodged under the finger nails. His results show that cysts of *E. histolytica* survive under finger nails, as judged by debatable criterion of stainability with eosin, for much longer than five minutes; that there is less chance of this occurring with short well-manicured nails than with long closely applied not well-manicured nails; and that ordinary handwashing with soap and warm water generally suffices, especially with shot nails, to dispose of fæcal material which might have lodged under the nails.

The period of time during which the cysts fail to take stain is great enough to permit contamination of cold moist foods or beverages.

### Leprosy Bacilli in the "Healthy" Skin of Lepers

A. A. Stein and M. I. Steperin (*Norsk. Mag. f. Lægevid.*, March, 1934, p. 278. *Ref. B.M.J.* July 7, 1934) report from the leprosorium of Krutijie Rutschji, Leningrad, observations made on the ninety-seven patients and forty-nine members of the staff. In none of the latter could leprosy bacilli be found in the nose, although the examinations were repeated in the case of the doctors and nurses. In a considerable proportion of the patients these bacilli were found in skin, although it looked healthy and had never been the seat of macroscopical leprous changes. The technique employed was to cut the skin so superficially that no blood (only lymph) escaped, and to raise a blister by the application of carbon dioxide snow, and then to examine the lymph for these bacilli. The proportion of positive and negative findings varied with the forms of the disease examined, but even in those forms in which the bacillus of leprosy occurs in scant numbers and is difficult to find, it was occasionally demonstrated by the method described. It alone yielded positive results in three cases in which the patients were apparently cured, and in whose nasal mucosa the bacillus of leprosy could not be found, even after the administration of potassium iodide. The author's success with the demonstration of the bacillus of leprosy in the apparently healthy skin does not detract from the great value they attach to the nasal mucosa as the surface most likely to yield the bacillus of leprosy on examination.

### Local Antigonococcal Serum in Gonoblennorrhœa and other Eye Diseases

W. A. Wille (*Brit. Journ. Ophthalmol.*, April, 1934, p. 218. *Ref. B.M.J.* June 30, 1934) instils the serum in the following manner. The conjunctiva is first irrigated with water, 1 per cent. cocaine is

instilled, and the everted lids are swabbed with boric tampons. With the lids still everted, the conjunctiva is covered with serum, the lids being kept everted for twenty-five seconds. This is done four times, with intervals of ten minutes, twice a day. At home boric tampons and protargol 2 per cent. are used hourly. The treatment has proved successful in gonoblennorrhœa, Koch-Weeks conjunctivitis, trachoma, spring catarrh, and dendritic ulcer, and is equivalent to the use of 2 per cent. silver nitrate without the danger of irritation, cauterization, pain, or corneal damage. A serum reaction, which may not occur till after three weeks' treatment, if present, is slight. In such cases the remedy is often especially beneficial.

### Healthy Carriers of the Meningococcus

G. RAKE (*Journ. Exper. Med.*, May, 1934, p. 553. *Ref. B.M.J.* July 7, 1934) reports an intensive study of the meningococcal carrier problem. For twenty months twenty-four persons on one floor of the Rockfellar Institute in New York were examined weekly, swabs being taken from the nasopharynx and plated directly on to a 4 per cent. rabbit blood, 0.03 per cent. glucose, nutrient agar medium. The proportion of meningococcal colonies was estimated, and the identification of the organisms carried out by morphological examination, fermentation, and serological methods. Ten carriers were found. Of these, five were chronic, four of them carrying the meningococcus for periods ranging from twenty-one to twenty-six months; two were intermittent, showing long intervals of freedom extending to four months and six months respectively; and three were transient, the meningococcus being found on one occasion only. The numbers of meningococci present varied considerably, but in some of the chronic carriers they constituted at times over 90 per cent. of the colonies on the plates. The effect of coryza and pharyngitis appeared to be negligible, unless of a type in which streptococci or other throat pathogens increased greatly in number, when the meningococci underwent a temporary or permanent diminution. A second community was examined, consisting of tewenty-five girls varying from 6 months to 14 years of age, who were in a foundling hospital suffering from gonococcal vaginitis; only two carriers were detected. This low incidence is more likely to have been due, the author thinks, to the striet isolation of the patients rather than to the comparatively short average period of observation—fourteen weeks and a half. A third community, consisting of 569 young men, of 18 to 25 years of age, collected in a concentration camp, was also examined, swabs being taken for only a few times from any given person. Twelve carriers were found, an incidence of only 2.1 per cent. Twenty-six carrier strains were examined serologically, and though only eight could be identified with one or other of Gordon's four types, absorption tests revealed their affinity to his groups I or II. Altogether five of the twenty-six strains belonged to his Group I and twenty-one to his Group II. This work shows that the meningococcal carrier state may be far more persitsent than has commonly been supposed.

## SURGERY

### A New Anæsthetic

From his experience in 1,200 cases, E. DE MEURON (*Rev. Med. de la Suisse Romande*, August 25th, 1934, p. 856) advocates as an anæsthetic a mixture of scopolamine, eukodal and ephetonin. This is prepared by MERK in ampoules containing 0.005 gram., 0.01 gram., and 0.025 gram of each drug respectively. Ephetonin, synthetically obtained from ephedrine, is an excitant of the respiratory centre, and thus counteracts the paralysing action on this centre of scopolamine and eukodal. The technique of administration is as follows. On the eve of the operation, 0.05 gram of veronal is given orally and repeated three hours before the operation. Two ampoules of the anæsthetic mixture are injected subcutaneously an hour and a half and one ampoule three-quarters of an hour, before the intervention. The narcosis, if not sufficiently deep, is completed by giving a few whiffs of an inhalation anæsthetic. Nausea, vomiting and pulmonary complications are rare after this method. This anæsthetic should be used prudently in cases of grave renal lesions; it is especially indicated when inhalation anæsthesia might be dangerous, as in pulmonary tuberculosis and cardiac affection.

### Ligature of the Angular Vein in Furuncles of the Upper Lip and Nose

H. SCHÆR (*Zentralbl. f. Chir.*, August 18th, 1934, p. 1907) alludes to the not inconsiderable mortality, from thrombosis of the superior ophthalmic vein extending to the cavernous sinus and from basal

meningitis, in pustules of the upper lip and nose. As a preventive measure he recommends, describing three illustrative cases, legature under local anæsthesia of the angular vein, which communicates with the cavernous sinus. He prefers an incision of 1 cm. internal to the inner canthus—that is considerably higher than that recommended by American writers: the vein may be superficial or embedded in the quadratus labii superioris muscle. In certain cases, ligature of the anterior facial vein and or the internal jugular veins is called for in addition. The ligature is best done before the appearance of rigors. In one of Schær's cases thrombosis of the anterior facial vein was palpable after a peritonsillar abscess: it was divided with the cautery and at the same time a section of the angular vein was ligatured and excised.

## OBSTETRICS AND GYNÆCOLOGY

### Cancer of the Ovaries

Cläes von Numers (*Finska Lakaresallskapets Handlingar*, August, 1934, p. 720) has found that among the 17,239 patients treated in a gynæcological hospital in Helsingfors in the fifteen-year period 1919-1933 there were 151 suffering from cancer of the ovaries—an incidence of 0.88 per cent. The average age was 49 years, the youngest patient being 10, the oldest 77 years. The ages at which the cases were most frequent were between 45 and 50. The disease was bilateral in as many as sixty-two. Of eighty-eight cases verified by operation thirty-five were bilateral. Although it has commonly been taught that cancer of the ovaries is comparatively common among the unmarried and nulliparæ, the author's material does not clearly endorse this teaching; and he notes in passing that a statistical study for the year 1930 has shown that 16.8 per cent. of the marriages which had lasted at least three years were childless. With regard to the symptoms, there were as many as twenty-eight patients who had had no pain. Seventy-five complained of diffuse abdominal pain, and forty-four of pain, referred to one side or other of the abdomen. The subsequent operation showed in several of these cases that the pain had been referred to the wrong side, or that the disease was bilateral. There were forty patients referring their pain to the small of the back, and ten to the hip and thighs. Four patients complained of pain in shoulders. The first symptom noticed was pain in sixty-seven cases and abnormal hæmorrhage in twenty-five. The frequency with which various other symptoms were the first to appear proved to be comparatively low, and there were only four cases in which disturbance of micturition was the first symptom. The recovery rate for the operable cases after an observation period of five years was 30.8 per cent. This rate would be raised to 38.1 per cent. if the metastatic cases were excluded. The operation mortality was 7.3 per cent. (six deaths).

### Local Injection of the Ovarian Hormone

C. Stanca (*Zentralbl. f. Gynäk.* October 6th, 1934, p. 2373) describes the case of a married woman aged 19 who had never menstruated and who had had since the age of 15 several weekly epileptic convulsions: the genital organs were anatomically normal. During operation for adhesions near an old appendectomy 1 c.cm. of ovarian extract was injected into each ovary. Twelve days later a menstruation lasting five days occurred, and four more followed at monthly intervals; after a few months' amenorrhœa she became pregnant and went to term. The epileptic attacks ceased after the injections in the ovaries, which at the time were noted to contain no corpora lutea. It is concluded that the injections brought about the first ovalution and set the genital cycle going, and that the epilepsy was due to hormonic imbalance. Stanca asks for trial of intra-ovarian hormone injections, but remarks that cases of amenorrhœa due to genital hypoplasia, diabetes, tuberculosis, malaria or Jacksonian epilepsy are unsuitable.

### Pituitary Deficiency After Confinements

L. Nurnberger (*Deut. med. Woch.*, September 21st, 1934, p. 1415) paints the following clinical picture. After a confinement recovery is incomplete, the patient feeling miserable and weak, though not actually ill. She feels cold and in need of much sleep, spending half the day in bed or on a sofa. She tires rapidly on the slightest exertion, and takes no interest in her surroundings. There is a lack of concentration and inability to read for long at a time. She is sometimes forgetful and depressed, and libido is much reduced or totally lost. She looks pale, anæmic, and old for her years. Her skin is flabby, cold, and dry, her expression is tired and suffering; the speech is slow and monotonous, and the movements are dragging. Often there are complaints of headache and loss or premature

greyness of hair. The hair of the eyebrows and armpits falls out, and the teeth require many visits to the dentist. There is no menstruation, or it is less, and occurs at longer intervals, than normal. It is probable that this picture is not due to any severe injury to the anterior lobe of the pituitary body, but to an insufficiency of it, perhaps only temporary, due to an excessive evolution of the normally hypertrophied pituitary gland of pregnancy. Failure to interpret this clinical picture correctly is all the more tragic as medication with an extract of the anterior lobe of the pituitary body acts in such cases like a charm, restoring the patient in comparatively short time to her normal physical and mental state. Overlooked, these patients are to be found in the waiting rooms of gynæcologists, neurologists, dermatologists, and dentists; and it is probable that sanatoria and hydropathic establishments house a goodly proportion of them. Professor NURNBERGER insists that other possible causes of the picture he has painted should be eliminated by a careful examination before the treatment he recommends is given.

### Pituitary Extract and Rupture of the Uterus

F. V. MIKULICZ-RADECKI (*Deut. med. Woch.*, May 4th, 1934, p. 665. *Ref. B.M.J.* July 7, 1934) finds that rupture of the uterus is becoming alarmingly common on account of the popularity of two measures —Cæsarean section and the administration of pituitary extract before the stage of dilatation is complete. As Head of the University Gynæcological Hospital in Königsberg, Prussia, this author has recently had occasion to study two cases of rupture of the uterus following the intravenous injection of a pituitary extract by general practitioners, and he records a third case, observed by a colleague, in which the pituitary extract was given by intramuscular injection. To these three cases, he adds eight from the literature. Common to ten of these eleven cases was the fact that the women were multiparæ. The lessons he extracts from these cases are that " plugging in " pituitary extract at random during labour constitutes malpractice, that every successive dose should be given with reference to the patient's reaction to previous doses, and that the administration of this substance by intravenous injection should be banned, as it fails to provoke the desired rhythmic contractions. Instead, it gives rise to tetanic contractions which do not promote the dilatation of the passages through which the fœtus has to pass.

# MEDICAL ASSOCIATIONS, SOCIETIES ETC.

Medical Societies, Associations, Unions, etc., are invited to make use of this section of the Journal. —EDITOR.

## PUNJAB MEDICAL COUNCIL

Criminal proceedings taken by the Punjab Medical council against MR. A. N. MEHRA, who styled himself as " M.D. " without lawful authority, have been brought to a close. The Additional District Magistrate, Amritsar, found the accused guilty and sentenced him to pay a fine of Rs. 51/-.

( *From the Registrar* )

## ALL-INDIA MEDICAL LICENTIATES ASSOCIATION

I

Notice is hereby given that the subject for the Dr. Joseph Benjamin Thesis Competition Prize Essay for the year 1935 of the value of Rs. 35 (thirty-five) is :—" Prevention & Treatment of Malaria " and that for the Dr. Ramachandrier Thesis Prize for the same year is " Prevention & Treatment of Cholera ". The value of this prize is Rs. 25/- (twenty-five).

All bonafide members of the Association ( All-India Medical Licentiates' Association ) are entitled to compete.

The thesis papers should not be of more than 1000 (one thousand) type-written lines or their equivalent.

Intending candidates are requested to send their papers to DR. JOSEPH BENJAMIN, President, Gujrat Branch of the All-India Medical Licentiates' Association—Dalgarwada, Ahmedabad, so as to reach him on or before the 30th November, 1935.

Sd/- DR. JAMIATRAM B. DESAI,
*President, Scientific Association.*

II

Notice is hereby given that the subject for the Dr. Joseph Benjamin Thesis Competition Prize for the year 1934, as published in the Indian Medical Journal of July, 1934 issue, page 415, of the value of Rs. 35/- (thirty-five) on the subject of " Anti-Natal Diseases, their Care and Treatment " is extended to 30th September, 1935 and that all bonafide members of the Association (A.I.M.L.A.) are requested to compete for the same.

Intending candidates are requested to send their papers to DR. JOSEPH BENJAMIN, President, Gujrat Branch, Dalgarwada, Ahmedabad, so as to reach him on or before the 30th September, 1935.

The thesis paper should not be of more than one-thousand type-written lines or their equivalent.

Sd/- JAMIATRAM B. DESAI,
*President, Scientific Section.*

## CONGRESS OF ANTHROPOLOGY

The Sixteenth Congress of Anthropology and Pre-historic Archæology will be held at Brussels from September 1—8. It will consist of the following sections: morphological and functional anthropology, blood groups, human palæontology, heredity and selection, psycho-sociology, criminal anthropology, ethnography, folk-lore and history of religions. Further information can be obtained from the general secretary, DR. DEKEYSER, 9 rue des Salons, Brussels.

## POPULATION PROBLEMS

The Third General Assembly of the International Union for the Scientific Investigation of Population Problems will be held in Berlin on September 9, at 11 a.m., in the rooms of the University. An International Congress will be held in Berlin on September 10—15 under the auspices of the International Union. The Congress will have the following divisions: (1) Population Statistics; (2) Biology and Race Hygiene; (3) Social, Economic and Psychological Problems of Population; (4) Medicine and Hygiene. The business office of the Congress is, Berlin W 62, Einemstrasse 11.

## FIFTEENTH INTERNATIONAL PHYSIOLOGICAL CONGRESS, LENINGRAD-MOSCOW, 9TH TO 17TH AUGUST, 1935

According to the decision of the Fourteenth International Physiological Congress in Rome, the Fifteenth International Congress will be held in the U. S. S. R.

The Congress will take place in Leningrad and Moscow, 9th to 17th August, 1935.

The Committee will provide board, lodging, etc., for all the members of the Congress and dependent members of their families. Arrangements will be made for trips and visits to several parts of the country at reduced rates. In order to avoid any delay with visas, and to procure the best conditions of life and work for the members of the Congress, all the physiologists intending to take part in the Congress are requested to enlist as soon as possible.

The membership fee, Rbls. 10=131 Francs 34 Centimes Gold, should be forwarded to the following address: The State Bank of U. S. S. R., Moscow, Current Account No. 7005 of the Committee of the Fifteenth International Physiological Congress. The cheque can be drawn in any currency according to the exchange rate of the day. Name and address of the sender should be given to the Bank.

Detailed information as to the programme of the Congress, life conditions, trips, etc., will be issued in the near future.

Please address mail concerning the Congress: Leningrad Main P. O. Box 13.

## INDIAN MEDICAL COUNCIL

Lt.-Col. R. S. Townsend, M.C., Offg. I. G. C. H., U. P., has been duly nominated by the Government of the U. P. as a member of the Medical Council of India, *vice* Colonel A. H. Proctor, D.S.O., V.H.S., resigned.

Lt.-Col. P. K. Tarapore has been duly nominated by the Government of Burma as a member of the Medical Council of India, *vice* Colonel C. A. Gill, K.H.S., resigned.

# MEDICAL NOTES AND NEWS

## POPULATION GROWTH AND BIRTH-CONTROL

Rapid increase of the population of India has led to a demand for the inception of preventive measures. Birth-control there, and also in Great Britain is, however, criticised by Col. C. A. Gill in a recent somewhat polemical paper (*J. Hygiene*, 34, 502:1934). According to Col. Gill, population in an area ought to be considered not only from the point of view of numbers, but also from the occurrence of irregular changes or ' movements ' in the population, which, apart from migration, are largely determined by forces controlling the birth- and death-rates. Statistical methods forecasting future population ignore such ' movements ' of population and estimates based upon population-growth curves have proved unreliable, for example, in India, and must be accepted with reserve. In a primitive community, prolificity as a means of race survival and an essential factor for progressive evolution is a paramount necessity, and artificial birth-control would constitute racial infanticide. Rural India, it is held, is such a community and is under-populated, and any State action to promote the practice of birth-control there is regarded as being a political crime and a biological blunder. In Great Britain, natural forces are now tending to limit increase of population, such as postponement of the average age of marriage and, possibly, a real decline in fertility. Since Nature requires a wide field of selection, nothing should be done to restrict the reservoir from which in the past many have sprung who have contributed greatly to human progress. The encouragement of birth-control among the masses, it is argued, is therefore to be regarded as being biologically reprehensible.

(*Nature—April 20, 1935.*

## ECONOMIC STUDY OF JAPAN'S POPULATION PROBLEMS

" Conflict and Co-operation, Economic and Political, in the Pacific " formed the theme of the Cawthron Lecture, 1934, delivered by Mr. Frank Milner, at Nelson, New Zealand, (Nelson, N. Z. : Cawthron Institute, 1934). There are, he said, ominous explosive potentialities in Japan's growing population pressure with its increase of more than one million per annum. Her population density is now 437 persons to the square mile, and though this is exceeded by Java, Belgium, England and Holland the situation is complicated by the fact that only 16 per cent. of the land is arable. With 2,774 persons living on each square mile of such land—not a foot of land being wasted—Japan has reached the point of complete saturation. Half the farms are less than 1½ acres in extent and three-quarters less than 2½ acres. The Japanese are not an emigrating people, and there are only about 635,000 living abroad. The only feasible solution of the basic population problem of Japan is the development of manufacture and trade, though inadequate resources of coal, iron ore, petroleum and other raw materials handicap her industrial expansion. Moreover, Manchuria, according to scientific experts, cannot provide coal or iron ore of the type needed for Japanese blast-furnaces. The shift from an agricultural to an industrial economy is far from complete, and at present less than 10 per cent. of the population work in factories employing more than five persons. Japan to-day is the real problem of the Pacific, and her isolation is breeding an ugly mood in her militarists. The solution may involve regional allocation of raw materials and markets to Japan involving heavy sacrifices, but such co-operative efforts must be made if a cataclysm is to be avoided.

(*Nature—April 13, 1935*).

## BRITISH EMPIRE CANCER CAMPAIGN

At the fifty-fourth meeting of the Grand Council of the British Empire Cancer Campaign held on April 10, it was announced that a grant at the rate of £350 a year from the year 1935 has been made to Sir Leonard Hill for the services of Dr. T. Reiter whilst continuing his research work on short wave therapy in the laboratories of the St. John Clinic and Institute of Physical Medicine. On the recommendation of the Physical Sub-Committee of the Scientific Advisory Committee, a grant of £1,000 a year for two years has been made to the North of England Council of the Campaign, to be placed at the disposal of

PROF. W. E. CURTIS, of the Armstrong College, Newcastle, and DR. F. DICKENS, research director of the Cancer Research Institute of the North of England Council, for the purpose of conducting an exhaustive scheme of research in short wave therapy. A grant of £700 has been placed at the disposal of the Scientific Advisory Committee for a special investigation, under its supervision, of the biological reactions of mono-chromatic radiations of various wave-lengths. The Grand Council has decided to continue to offer from time to time a prize and a medal for the best essay submitted on a set subject concerning research; gold medals will also be awarded from time to time to those in the British Empire who have carried out and published contributions to cancer research of outstanding merit.

## NEW MOUNT EVEREST EXPEDITION

The Mount Everest Committee announces that another Mount Everest Expedition will take place during 1935-36, with the consent of the Tibetan Government. MR. HUGH RUTTLEDGE, who led the 1933 expedition, has been offered, and has accepted the leadership. The Committee, the chairman of which is SIR PERCY COX, will in due time make an announcement of plans. The first Mount Everest expedition under COL. H. BURY was in 1921. This was followed by a second expedition under General C. G. BRUCE in 1922 and a third under Lieut-Colonel E. F. NORTON in 1924. On that expedition, MR. G. A. LEIGH-MALLORY and MR. A. C. IRVINE lost their lives in the last thousand feet of the ascent, but it is not improbable that they reached the summit. The fourth expedition, in 1933, met with exceptionally bad weather conditions and was forced to abandon the attempt when success seemed to be within sight. In 1933, the Houston Mount Everest expedition made a flight over the summit and secured photographs.

## THE HEALTH OF THE SCHOOL CHILD

The annual report of the chief medical officer of the Board of Education for 1933 has just been published. During the year 3,000,000 children passed under definite medical review and subsequently 2,000,000 reinspections were carried out. Of the 1,855,499 children submitted to routine examination, 20,579, or 11.1 per thousand were found to be "malnourished" and requiring treatment, and 23,760 or 12.8 per thousand, were found to be undernourished and requiring observation. The figure for 1932 of "malnourished" children requiring treatment was 10.7 per thousand, and for 1931 was 11.2. The massed return for 1933, compiled from figures submitted by 316 local education authorities, indicated that the condition of the school children throughout England and Wales in 1933 was similar to that in the two preceding years and showed no deterioration. The total number of meals provided in the year 1933-1934 was 68,800,000, an increase of 6,500,000 over 1932-33, and the number of children who received meals was 414,800, as compared with 399,400 in 1932-33.

SIR GEORGE NEWMAN, therefore, concludes that the general health and nutrition of the population of England and Wales, taken as a whole,, was well-maintained in 1933, in spite of economic and social difficulties, distressing as these have been. "There can be no question" he says "that the nutrition of the English people is better to-day than at any past period of which we have record. But that does not say or mean that present standards of health and nutrition cannot be or should not be improved." It may be remembered that he came to a similar conclusion in his report on the health of the nation. (*The Journal*, Nov. 3, 1934, p. 1388).

(*Foreign Letters*, *J.A.M.A.* 104:1, 1935).

## IS SOCIAL INSURANCE A SUCCESS?

In the November 14 issue of the *Concours Médical*, a very instructive article by DR. P. DALLY gives some statistical data that will be of value in the evaluation of proposed legislation in the United States to establish sickness insurance under State or national supervision. When BISMARK in 1886 proposed such a law in Germany, his object was to neutralize the rapidly growing Socialist party, which demanded higher wages rather than compensation for illness. Laws of the latter kind have never been popular with the working classes, and even less so with the medical profession. According to Dally, such legislation was due to political considerations that aimed primarily to distribute public funds to the masses. The care of the sick was a secondary consideration. None of the laws had as their object public health in the larger sense; and no efforts were made in the direction of preventive measures. This seems rather paradoxical when one recalls that such efforts would have only resulted in a decrease in the amount

of money needed to carry out the laws and thus, in the final analysis, have lightened the burden of those who were contributors and beneficiaries of the fund. These laws, especially in countries like Germany and Austria, where they were first employed, are still in an experimental stage, as evidenced by the constant changes that are being made, as the result of the demands of the employer and the employee.

A vital error lies in the fact that these laws attempt to solve an intangible question of morals, such as the reciprocal relation of patient and physician. The insured worker, in many instances, tries to get back the money he has paid by malingering, by exaggeration of the time needed to recuperate and by dissatisfaction with the percentage of his invalidity which has been decided on by the medical examiners. KIRSCHNER, a German surgeon of international reputation, says, "Our country is like a huge hospital, a community of invalids, where every individual tries to grab as much as possible out of the big indemnity bag into which he pours his contributions." One out of every seven persons is a beneficiary of the sick relief funds, in Germany. There have been as many officials to administer these funds as beneficiaries in Germany. This is already the complaint in France, even though the law is only four years old. In countries where insurance against illness was optional, it has become obligatory. Where formerly there was only a patient and a physician, the decisions of the latter are subject to supervision by a medical government employee. There is constant friction in countries where there is obligatory sickness insurance. In Austria, the law has been modified twenty-eight times since its passage in 1887.

This conflict will cease perhaps, some day, when the national insurance agencies have at their disposal a corps of medical government officials who devote their entire time to the care of the assured. There will be no further conflict, because there will no longer exist a medical profession in the present interpretation of the words. A better method, perhaps, of utilization of the large funds of these state insurance departments would be to create large diagnostic centres and hospitals, which would permit better care to be given to the worker. Some efforts are being made in this direction.

There are few countries in which the medical profession has neither been consulted in the passage of legislation for sickness insurance, nor even consulted from time to time in the management of the departments. This is certainly true of France.

Neither the assured nor the medical profession is satisfied with social insurance laws. Among nineteen countries of Europe, this is the opinion in all except Bulgaria, Denmark, France and Holland. In Yugoslavia, the insured is satisfied, but not the medical profession. Some very instructive tables accompany the article of DALLY, from which some data are as follows:

Free choice of physicians: Yes—in Bulgaria, France, Great Britain, Holland, Norway, Sweden and Switzerland. No—in Germany, Esthonia, Hungary, Latvia, Poland, Czechoslovakia, Yugoslavia and the city of Vienna.

Who is obliged to be insured? In Germany, every worker earning less than $900, in France all less than $1,100, in Great Britain all less than $1,200 and also all manual workers. In Germany, this means nearly one third, in France, about one fifth and in Great Britain, about two fifths of the total number of inhabitants.

If those who have charge of social insurance would not neglect to utilize the vast funds at their disposal in greater efforts to prevent disease, much good could be accomplished, is the conclusion of DR. DALLY.

## DISCUSSION ON HEALTH INSURANCE

The second annual reunion of the Associazione Italiana di medicina legal was recently held at Montecatini. The medicolegal problems of insurance against disease were discussed. DR. BELLUCCIHEAD, physician of the Cassa Nazionale Malattie degli Addetti al Cumm Commercio, pointed out that the establishment of insurance against disease required the collaboration of jurists, economico-social resources and physicians. At present there are two tendencies in the field. First, the administration of care and pecuniary aid to cover the most pressing necessities of life are required in favour of insured sick persons. By the second plan, the insured are offered medical services. Between these two extremes there are intermediate stages. Many persons claim that the characteristic differentiation of insurable diseases is nearly impossible, which is not the case if a definite interpretation is given to the two conceptions in incapacity and inability for work. DR. DIEZ proposed that the inability to work be considered a disease from the point of view of insurance.

DR. CAZZANIGA spoke on chronic diseases from the point of view of insurance. In regard to professional secrecy in health insurance it was decided that the question presents different angles according to the different relations between physician and patient. The physician in charge of the treatment of a patient is bound to keep medical secrecy but not so the insurance physician. A new intermediate figure between the physician in charge of the case and the insurance physician is the consultant physician who acts also as an overseer and who at present is found in Italy only in some insurance societies.

( *Foreign Letters, J.A.M.A.*, 104:1, 1935 )

# CORRESPONDENCE

To the Editor,

The Journal of the Indian Medical Association,

67, Dharamtala Street, Calcutta.

Dear Sir,

Kindly publish the following letter in your esteemed Journal and oblige.

Yours faithfully,

Sd/- V. Govindan Nair.

## TREATMENT OF SMALL-POX WITH LIVER

I have found injectable liver extract useful in the treatment of smallpox. It modifies the course of the disease, shortens the duration, aborts the eruption at all stages and avoids the consequent disfiguration from deep scarring and pitting. It also controls the toxic symptoms, improves the general health and well-being of the patient and prevents the development of the usual complications of untreated cases of small-pox as boils, subcutaneous abscesses, toxic rash, phlebitis, thrombosis, etc.

The treatment proper consists of daily intramuscular (intragluteal) injections of liver extract till the eruptions desiccate and incrust. Five c.c. of the extract should be given for the first two or three days according to the severity of the case, followed up by two c.c. daily for the remaining period. The extracts used by me were (1) campolon and (2) injectable liver extract of Messrs. Bengal Chemical & Pharmaceutical Works Ltd.

For full particulars the reader is referred to the article " Treatment of Smallpox with Liver " in a previous section of this Journal.

Sd/- V. Govindan Nair.

# OBITUARY

It is with a heavy heart that we announce the death of another member of this Association, Dr. N. Chandra, L.R.C.P., L.R.C.S. (Edin.), L.R.F.P. & S. (Glas.), who expired at his Madhupur residence on the 17 May, 1935.

The late Dr. Chandra was born on the 23rd February, 1883, in a rich family as the third son of the late B. N. Chandra, Advocate. He had received a liberal education in this country after which he studied Medicine in the United Kingdom and qualified in 1912. Since then he was practising in Calcutta and had very soon earned the reputation of an able surgeon.

He played a great part in the national movements of the country since 1920 and was one of the founders of the Chittaranjan Hospital and Jatiya Ayurvijnan Vidyalaya of which he was the Superintendent till the date of his death.

He leaves behind his widow, a daughter and many relations, friends and admirers to mourn his loss.